

# CONCISE ENCYCLOPEDIA OF GRAMMATICAL CATEGORIES

Edited by  
Keith Brown  
Jim Miller

PERGAMON

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ENCYCLOPEDIA  
OF GRAMMATICAL  
CATEGORIES



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## Editors' Foreword

This volume is a collection of articles on grammatical categories, that is the categories that have been found useful for the analysis and description of the structure of languages. The notion of category is understood in a wide sense—a class or division in a general scheme of classification. The articles take different views on the criteria for classification, derive from different theoretical viewpoints and approach questions of categorization from a variety of points of view within linguistics and philosophy of language. Most of the articles originally appeared in *The Encyclopedia of Language and Linguistics* (ELL) published in 10 volumes in 1994 by Pergamon Press, Oxford with R. E. Asher as Editor-in-Chief. They have all been revised and updated where necessary by their authors and some have been significantly enlarged and modified. A few of the articles have also appeared in the complementary volume on syntactic theory: Brown K, Miller J (eds.) 1996 *The Concise Encyclopedia of Syntactic Theories*, Pergamon Press, Oxford. There are a number of entirely new articles, specially commissioned for this collection. The glossary is a revised and reduced form of the relevant entries from the glossary that appeared in ELL. We are grateful to all the contributors for their support for the present volume.

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October 1999

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# Introduction

## 1. Categories

One of the senses of 'category' in the Oxford English Dictionary is: 'a class, or division, in any general scheme of classification'. This sense is annotated 'especially in Linguistics'. One of the illustrative quotations is: 'Large form-classes which completely subdivide either the whole lexicon or some important form-class into form-classes of approximately equal size, are called categories. Thus, the English parts of speech (substantive, verb, adjective, and so on) are categories of our language.' (Bloomfield, 1933: 270).

Categorization lies at the heart of all linguistic analysis and has a history as old as the history of language study itself. Indeed without categorization there would be no linguistic analysis. As Trask puts it (*Parts of Speech*): "Every language has thousands of lexical items. If everyone behaved in its own unique way, there would be no syntactic generalizations to be made, and the study of syntax would be an unrewarding discipline, consisting merely of the endless tabulation of miscellaneous observations".

Grammatical categories, that is the parts of speech, the word classes themselves, and the categories traditionally associated with them such as case, mood, tense, aspect and voice, have been a central topic of linguistic analysis since the time of the Alexandrians. They are central to all work on the analysis and description of languages and for the instruction of non-native learners and their teachers. In any teaching grammar of Russian, for example, the pages devoted to case, aspect and tense, modality and voice outnumber the pages devoted to syntactic matters such as the formation of relative, complement or adverbial clauses. This is because Russian has a very rich inflectional morphology, which realizes categories of this kind. But the unequal assignment of space to morphology and syntax is due to the complexity of the systems of the tense, aspect and mood systems themselves and the way in which they are realized by the morphology, rather than to the formal complexity of the inflection system in itself. In contrast, English has rather little inflectional morphology but its tense, aspect and mood systems, and their realization in the syntax, demand equally extensive expositions in reference and teaching grammars.

Grammatical categories occupy an equally central place in semantic and pragmatic analysis, in cognitive science and philosophy, though in these disciplines they are more often referred to as types rather than as categories, as they sometimes are also in linguistic discussions (see, for example, *Aspectual Type(s)*). A simple example such as *The vandal smashed the window* quickly explains the interest. This sentence, more accurately the speaker uttering it, describes and presents a situation as a prototype transitive event. A human Agent, 'the vandal', acts intentionally on an inanimate Patient. (cf. *Functional Relations* for an account of terms like 'agent', 'patient', etc.). There is only one Patient and it is totally affected by the action. The situation could have been presented with only the Patient participant, in a passive construction *The window was smashed* or in the middle construction *The window smashed* (cf. the discussion in *Passive and Related Constructions and Voice*). There might have been more than one Patient—*The vandal smashed the windows*—and the Patient might have been non-specific—*The vandal smashed windows*. The original example presents a single event but the event could have been multiplied—*The vandals smashed windows all day*, *The vandal used to smash windows every Sunday evening*. Equally, the situation could be presented as not reaching a boundary (see *Aspect: Basic Principles*)—*The vandal was smashing the window (when the police arrived and arrested him)*.

The construction of the original example signals that the speaker is making an assertion and presenting the situation as a fact. The speaker could have asked a question—*Did the vandal smash windows?*, *Who smashed windows?*, presented the situation as merely possible—*The vandal might have smashed the window*, or denied that the situation occurred—*The vandal didn't smash the window*. The original example presents the situation as factual or realis; the introduction of a modal verb, a negative or a change from assertion to question, or a combination of these, makes the situation irrealis to a varying extent (cf., for example, the discussion in *Mood and Modality: Basic Principles and Modality*). As has been well documented by Hopper and Thompson (1980), the above-mentioned changes to the original example of a prototypical transitive event lead to changes in the case-marking of the Patient/direct object noun in a wide range of languages (cf. also Tsunoda 1994).

The topics mentioned in the preceding two paragraphs bear directly on concepts of fundamental importance for linguists, philosophers and cognitive scientists. The basic distinction is that between propositional content and proposition. The propositional content attaching to *The vandal smashed the window* is a completed event involving an Agent operating on a Patient: aspect and roles are central. In mapping the general propositional content onto a particular proposition the speaker

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decides whether to refer to a specific Agent and Patient, whether to locate the situation in past, present or future time, whether to present the situation as realis or irrealis and to what extent. The speaker also has to choose appropriate lexical items depending on the kinds of referents and the kind of action. At stake are the sorts of information required for successful communication, the essential acts of communication such as referring, predicating, asserting, and questioning, and the total information required for the creation and interpretation of coherent texts. (See, for example, Barwise and Perry 1983).

The number and nature of the categories that are identified depends on the criteria used for their classification—morphological, syntactic, semantic and pragmatic or some combination of these. The inventory can also vary depending on the purpose of the classification: for example whether it is part of a syntactic model, interested in language universals, focussed on historical change or some combination of these.

## 2. Word, Phrasal and Sentential Categories

Word classes, the ‘parts of speech’, have a long tradition in Western linguistic scholarship. The modern system derives essentially from Alexandrian grammarians working on Greek. Their taxonomy was based on Aristotelian methods of classification, not originally set up for grammatical purposes. Thrax in c.100 BC identified eight word classes; five of the definitions (taken from Robins (1967: 33–34) are quoted below.

noun	‘a part of speech inflected for case, signifying a person or thing’;
verb	‘a part of speech without case inflection, but inflected for tense, person and number, signifying an activity or process performed or undergone’;
participle	‘a part of speech sharing the features of the verb and the noun’;
preposition	‘a part of speech placed before other words in composition and in syntax’;
conjunction	‘a part of speech binding together the discourse and filling gaps in its interpretation’

From a contemporary perspective, the definitions turn out to be surprisingly familiar, with classes of verbs, nouns, prepositions, etc., and also to have unexpected omissions—there is no distinct class of adjective, and inclusions—participles are recognized as a separate class.

As can be seen, Thrax’s classification invokes four kinds of criteria: morphological, semantic, syntactic and pragmatic; in the previous section we have seen the relevance of all of these criteria for linguistic categorization. The morphological criteria (‘inflected for case’, ‘without case inflection’, etc.) were particularly salient for Thrax, which is perhaps not surprising since Greek is a highly inflected language. It enables a distinction to be drawn between those categories that contain inflected words whose forms are variable, classes like noun and verb, and those that contain invariant words, like preposition and conjunction. This distinction is still used, in English for example, where nouns and verbs have variant forms, but prepositions, articles and conjunctions do not. More particularly the variation can be related to those aspects of word formation that associate particular parts of speech with categories that have always held a central part in grammatical description because of the indispensable role they play in grammatical processes: nouns with case and number, verbs with tense, person and number and so forth. These categories have always been central in syntax: they are the functors or function words of the descriptive grammarians, the ‘functional categories’ of generative grammar (cf. Freidin 1996, Atkinson 1996) or the ‘operators’ of a more functionally oriented model like that of Van Valin and La Polla (1997). The primacy, for Thrax, of morphological marking is usually held to be the reason why he distinguishes no class of adjectives, which for him were a subclass of nouns since they inflect for case like nouns, and why he distinguishes a class of participles, which not only inflect for case like nouns, but also for tense like verbs. Contemporary accounts, as we shall see, usually consider syntactic rather than morphological criteria to be primary, and thus characteristically do identify adjectives as a distinct part of speech (cf. *Adjectives*) and consider participles to be a subclass of verbs, though it is interesting to observe the recent postulation of a class of *Converbs*.

Semantic criteria (‘signifying a person or thing’, etc.) were clearly also salient for Thrax, though in this respect it is relevant to note that he regarded grammar not as a discipline in itself, but as part of the study of literature. Semantic criteria are relevant not only to prototypical semantic properties of the major form classes themselves (verbs signify an activity or process etc.) but also to the morphological categories they are typically associated with—grammatical number and ‘more than oneness’, grammatical gender and sex, tense, as a grammatical category, and time reference and so forth. Contemporary accounts of word classes usually point out that it is not at all difficult to demonstrate that semantic definitions alone are unsustainable (see, for example *Categories, Linguistic*). Thus, abstract nouns do not ‘signify a person or thing’, and indeed nouns like *activity* and *process* are used in the definition of verbs; conversely verbs like *think* and *belong* signify neither activities nor processes; and, as every school pupil knows, the gender class of a French or German noun is not generally obvious when they refer to ‘things’ rather than to ‘people’. Semantic criteria do, however, play an important role in comparative and in typological studies, a matter to which we return below.

For Thrax, syntactic criteria are less important. They are called into play to distinguish between invariant words: articles are 'preposed or postposed to nouns', prepositions are 'placed before other words in composition and in syntax'. It is perhaps not surprising that Thrax relied little on syntactic criteria. The Alexandrians identified the sentence as the largest unit of grammatical description, and were able to describe much of its 'functional' structure, the dependencies contracted between the various words in the sentence, through case marking and the grammar of agreement. They did not however have a machinery to describe constituent structure beyond a few obvious properties like obligatory word order: 'placed before other words in composition and in syntax'. Since Greek is a relatively free word order language, this is understandable. A better understanding of constituent structure, and through this of the distributional properties of syntactic categories, comes to the fore in American structuralism and its various successors, including generative grammar (see *Constituent Structure, Grammatical Units*). Nor does Thrax give much attention to pragmatic criteria, though perhaps they emerge in definitions like that of the conjunction as 'binding together the discourse and filling gaps in its interpretation'. Today, pragmatic criteria have come to assume an importance in descriptions of the communicative use of language and we return to this matter also in due course.

Thrax's definitions are interesting for a variety of reasons. First is the very notion of categorization itself, the recognition that a system of description needs a system of categorization and that for the system to have explanatory as well as descriptive value it must make use of appropriate criteria. Second is the range and nature of the criteria employed: some relating to the formal properties of words, others to their semantics. As this volume illustrates, this range of criteria are still to be found today, albeit somewhat reinterpreted and with the balance between them changed. Within a single language syntactic criteria are today paramount, for comparative and typological purposes semantic and functional properties are equally important. Finally it is relevant to note that the general framework of Thrax's part of speech system has proved remarkably robust, as can be attested by the fact that a volume such as this has articles on Nouns, Verbs, Prepositions and so forth.

In the familiar European languages, which tend to be inflected to a greater or lesser degree, words can be assigned to classes on the basis of their internal structure, their morphological properties (that is, how they themselves are composed) and their distribution in phrasal structures (that is, how they are composed into larger structures, their syntactic properties). Consider first the internal structure of words. In general, words from the 'major' classes, typically Noun, Verb and Adjective, are variable in form, though this is by no means true of all languages, and we will return to this issue below. But it is so in English, though to a rather limited extent. Nouns have two forms: *boy*, usually referred to as the 'singular' form, and *boys*, the plural form. The variation corresponds to a variation in the number of 'boys' at issue. Because of this semantic association the category is usually referred to as one of number, with the two terms singular and plural (see *Number and Number Systems*). 'Regular' verbs are often analysed to have five distinct forms: two 'present tense' forms, *walk* and *walks*, a 'past tense' form *walked* and two 'participles' *walking* and *walked*. We should observe that the number of forms recognized is a matter of analysis (and other analyses recognize a larger number of forms): with regular verbs the past tense and past participle forms are identical: they are differentiated because the past tense forms are tensed and by virtue of this property can be used as the only verb in a sentence (*the boy walked*), whereas participles are not tensed and hence are typically found in compound verb forms with a tensed auxiliary (*the boy has walked*). Furthermore, in 'irregular' verbs the past tense form and the past participle forms are often distinct (*the bird sang*, *the bird has sung*, etc.). The form *walked* frequently, but by no means invariably, is used to describe events that took place 'in the past'; by contrast *walk* is used to describe events that still take place, usually 'habitually'. Because of the association with temporal reference the alternation is usually described as involving the 'past' and 'present' tense forms respectively and the category itself is referred to as tense (cf. *Tense*). In a similar way the other alternations of form can be accounted for, and in each case an alternation established by formal means is named by a typical semantic use.

The external properties of words are generally of two kinds, distributional and functional. The distribution of a word is the set of environments in which it can occur; its function describes the nature of the dependency between the word and others with which it co-occurs. So, for example, in most grammars of English the defining distributional characteristics of the central class of adjectives are that it can follow an article and precede a noun, as in *a tall man*, that in a simple sentence it can follow a form of the verb BE, as in *the man is tall*, and that it can be preceded by intensifying words, as in *very tall*, *extremely tall* and so on. The function of *tall* in *a tall man* is usually described as 'attributive' (it describes an attribute of *man*) and in *the man is tall* it has a predicative function ('tallness' is predicated of 'the man'); in *very tall*, *very* has the function of 'intensifying' the property of 'tallness'.

It will immediately be clear that even such apparently simple statements as these have further ramifications, of which we explore two: they imply further structure, and structure and function are closely interrelated. Consider first further structures: to say that *tall* follows an article and precedes a noun obviously assumes the prior identification of classes of articles and nouns, but it also assumes that the string *the tall man* is itself a unit within which the appropriate distributional statements can be made. This in turn leads to an identification of the internal structure of this unit, usually identified as a Noun Phrase, in this case having the structure Article + Adjective + Noun, and we can then go on to identify the external distribution of the Noun phrase, as, for example, subject of the sentence or object of the verb. The process is iterative leading to larger and more complex units (see *Constituent Structure, Grammatical Units*). As far as functions are concerned, the



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noun can be regarded as the principal constituent of the Noun phrase, and hence the constituent that lends its name to the larger constituent and functions as its 'head' (see *Head and Modifier*). The co-constituents in the example are modifiers; hence tall is said to be an attributive modifier in *the tall man*.

It is clearly the case that internal structure and external distribution are interdependent—consider for example the category of number discussed briefly above. The category is not only relevant for the form of individual words, it also has great importance for other grammatical processes, especially 'agreement', the process that marks the dependence of one item on another, or the co-dependence between items, with matching terms from the same category (cf. *Agreement*). In English the definite article does not vary for number—*the boy, the boys*—though the indefinite article is restricted to singular nouns—*a boy* but not *\*a boys*. Some of the other determiners do co-vary for number with the nouns they occur with: *this boy: these boys*. To describe agreement patterns like this we need to determine which of the two categories are the controller of the agreement and which the target, and the domain within which agreement occurs. As far as controllers and targets is concerned, the traditional position is that it is the noun, the head of the noun phrase, that controls agreement on the determiner, a dependent within the noun phrase—a singular noun selects a singular determiner, etc. As far as the domain of agreement, again the traditional position is that agreement of the kind illustrated occurs with the phrasal category of the noun phrase. English is notoriously morphologically impoverished, but other European languages have, to a greater or lesser extent, a much richer system of variation in word form. In French articles not only co-vary for number—*le garçon, les garçons*, etc.—but also for gender—*le garçon, la fille*. German has an even more complex system with three genders and also case. In the French examples, number is 'overtly' realized, in that it is marked on the head; gender on the other hand is 'covert' in the sense that there is no head marking, but there is a marker on the dependent. Whether overt or covert, the category is important.

Thus far we have considered mainly word and phrasal categories. Phrases however compose into sentences and categories of the sentence are no less important than phrasal categories, though we do not have the space to do more than mention them. Here too formal, semantic and pragmatic considerations come into play: consider, for example, in simple sentences the relationship between 'interrogative', as a formally defined clause or sentence type, 'question' as a semantic type, and the pragmatic, speech act, category of 'enquiries': *Sentence Types and Clause Subordination* explores some of these relationships. Then too there are issues related to the formation of complex and compound clauses. The general syntactic processes are considered in *Coordination and Subordination and Complementation*. Particular types of subordinate clause are explored in more detail in articles on *Relative Clauses, Conditionals, Concessives*, etc. where the semantics and pragmatics of these constructions are also discussed.

### 3. Semantic and Pragmatic Criteria

As we have already noted, part of Thrax's definitions of the major parts of speech are semantic (nouns signify 'a person or thing'; verbs signify 'an activity or process performed or undergone' and so on). Similarly, his characterization of the grammatical categories associated with the major parts of speech are semantic, for number, tense, etc., and syntactic for case. We have noted that it is easy to show that in a particular language semantic definitions of this kind are impossible to sustain as a serious basis for identifying word classes. From a strictly formal point of view this is right, but this is not a good reason for jettisoning semantics. Languages are symbolic systems developed and used by human beings for communication. As Slobin (1973) observed many years ago, children cannot learn sequences of symbols without meaning, and adults too have difficulty in remembering and using meaningless concatenations of symbols, such as telephone numbers and PIN numbers. It would be surprising were there no parallels at all between grammatical patterns and semantic patterns in a language and careful analysis, involving the use of prototypes, does indeed bring out these patterns.

Within a particular language, as Lyons (1966, 1977) makes clear, parts of speech or word classes must be defined on the basis of formal criteria: their morphological properties, e.g. whether they inflect or not; their morphosyntactic properties, e.g. whether they agree in number and person with the finite verb in a clause or whether they assign case to nouns; their syntactic properties, e.g., which types of construction they occur in and which slots they occupy in those constructions and so on. As mentioned above, a prototypical adjective such as *tall* has the morphological property that it takes the suffixes *-er* and *-est*, the morphosyntactic property that these suffixes signal comparative and superlative degree (*taller, tallest*) and the syntactic properties of allowing *very* to precede it (*very tall*) and of occurring between Determiner and Noun in a Noun Phrase (*the tall girl*), and occurring in the slot following *is/are/became* (*she is tall*). Other words fail to meet all of these criteria but are nonetheless classified as adjectives, albeit a subclass of adjectives, because they occur in at least one syntactic adjective slot and do not meet the criteria for other word classes. For instance, *major* does not take the suffixes *-er* and *-est* and does not occur after *very* or *is/became*, etc. (or at least did not originally occur in these slots; it has begun to behave more like a central adjective). It does occur in noun phrases, as in *a major eruption*.

On the basis of general formal criteria of this kind analysts of English can establish the large word classes of noun, adjective, verb, preposition and adverb, together with a number of smaller classes, determiners, conjunctions, etc. For each of these classes, in addition to the major criteria that characterize central members of the class, there are minor criteria that justify the recognition of smaller word classes, subsets of nouns, verbs, etc. For example, verbs such as *know, report* and *hear*

can be followed by a complement clause, as in *I know that she will write*, *They reported that their house had been burgled* and *We heard that you were leaving*. Other verbs exclude a complement clause, as demonstrated by the unacceptability of *\*He laughed that he was just joking*, *\*They rejected that he had stolen the car*. Nouns such as *chair* and *dog* do not occur without an article—*the dog barked*, *\*Dog barked*; nouns such as *wine* can occur with or without an article—*Wine is good for you*, *The wine is corked*; and nouns such as *Ethel* exclude an article in their typical use—*\*The Ethel summoned the mechanic to repair the photocopier*. In traditional terms *dog* is a common count noun, *wine* is a common mass noun and *Ethel* is a proper noun. The distinction between major and minor criteria will be important when word classes are considered from a typological perspective.

Word classes established on formal criteria can then be examined with respect to their meaning. The traditional description of nouns as denoting persons, places and things turns out to be adequate for prototypical, central nouns, which denote concrete, observable entities. It does not apply to nouns such as *anger*, *property*, or *event*; but *property* and *event* meet the major criteria for nouns—a *property*, *the properties*, *an interesting property*, *invent properties*—and *anger* meets some of the major criteria—the *anger* but not *\*an anger*, *his savage anger*, and so on. The fact that the major formal criteria for prototypical nouns apply to words such as *anger* justifies the latter being classed as nouns but also suggests that ‘ordinary speakers’ of English treat *anger* as though it denoted an entity and perhaps have cognitive structures constructed out of different types of entity. Nouns such as *dog* are said to denote first-order entities and nouns such as *anger* and *property* are said to denote second-order entities. (Space does not permit a proper discussion of the linguistic and cognitive issues.) The key point is that a word is classed as noun, verb, etc. on the basis of formal criteria and the terms ‘noun’, ‘verb’ and so on are merely labels for classes which could be replaced by neutral labels such as ‘Class 1’, ‘Class 2’, etc. That words apparently very diverse in meaning such as *anger* and *dog* share many major formal properties raises deep and interesting questions about the ‘ordinary speaker’s’ conception of the world, about his or her cognitive representation and leads to the unexpected conclusion that the traditional semantic definitions of the parts of speech, while quite unsatisfactory as definitions, nonetheless reflect an important fact about language and cognition.

The need for both formal and semantic criteria becomes quite clear in the comparison of two or more languages. Russian grammars contain statements about nouns in Russian and English grammars about nouns in English. A reliable analysis free from the circularity of assertions such as ‘*Tree* denotes an entity because it is a noun and *tree* is a noun because it denotes an entity’ is only possible if formal criteria are taken as basic. But formal criteria do not allow the English word class labelled ‘noun’ to be equated to the Russian word class labelled ‘noun’ for the simple reason that the formal criteria for the English word class are completely different from the formal criteria for the Russian word class. In spite of this, analysts and learners of Russian as a second language find no difficulty in talking of nouns in English and nouns in Russian and in equating the two. The basis for this identification must be partly semantic. If this is true for the cross-language identification of the major categories like noun and verb it is just as true for identifying categories such as *Number and Number Systems*; *Gender*; *Definiteness*; *Possession* and so forth.

Pragmatic criteria also have their place. These are rooted in the acts that speakers (and writers) perform when they produce utterances. There is a large literature on speech acts which cannot be reviewed here; the central ideas are discussed in Lyons (1995: 234–57), and see *Speech Acts and Grammar*; *Speech Act Verbs*; *Indirect Speech Acts*, etc. Certain acts—making statements, asking questions and issuing commands (in the broadest sense)—are central to human communication and are allotted grammatical resources in every language. (See *Sentence Types and Clause Subordination*; *Mood*, *Clause Types and Speech Acts*.) The way these distinctions are drawn and signalled in the languages of Europe is by no means universal, as *Mood and Modality: Further Developments* emphasizes,

Other acts are not so prominent but are no less central to human communication and relate directly to the different parts of speech. Searle (1969) treats reference and predication as propositional acts; speakers and writers refer to entities and predicate properties of them. The idea of reference as an act was adopted and extended by Lyons (1977) and incorporated into a general opposition: denotation and lexical items belong to language systems, reference and speakers go with language behaviour. The notion of reference as an act, and indeed as a collaborative act between speaker and hearer, is now a fundamental tenet of linguistic and psycholinguistic research and has been described in detail by Clark (1992, 1996). In English the class of nouns, established on formal criteria, contains words denoting entities and nouns enter into noun phrases, the units that speakers use when referring to objects. This is not to say that every occurrence of a noun phrase functions as a referring expression, nor that the difference between nouns and other word classes is connected solely with referring; nonetheless the referring function is invested in noun phrases, which can support the function only because they contain nouns.

The notion of predication as an act is prevalent in traditional grammar and is expressed in the formula of ‘someone saying something about a person or thing’. Predication has been largely ignored in discussions of speech acts, perhaps because, as Searle (1969: 123) puts it, predication is always part of a larger act, making a statement or asking a question or issuing a command. The latter acts are certainly more prominent in any body of speech or writing. In English verbs signal the performance of a predication. Whether adjectives and adverbs are associated with a speech act is not a question that has received much discussion, though it is clearly the case that in some languages adjectives too act as predators, an issue to which we return in the final section. It is, however, worthwhile observing that in traditional grammar adjectives, and certain

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kinds of adverbs, are labelled ‘modifiers’, a label which reflects the function of these words in clauses. A parallel can be drawn; just as it is not nouns that refer but speakers using nouns, nor verbs that predicate but speakers using verbs, so it is not adjectives or adverbs that modify but speakers using adjectives or adverbs. Modification can be seen as the act of adding information to that carried by the central word which the speaker uses for a given act of referring, in the case of adjectives, or predicating in the case of adverbs. Explaining the different word classes or parts of speech in terms of speech acts offers a solution to one difficulty with denotation; the class of things is so wide that it can be treated as including events, and even the distinction between first and second order entities is of no help. First-order entities are denoted by nouns, but second-order entities are denoted by both verbs and nouns, and indeed by adjectives.

The speech act explanation also provides a connection between word classes in different languages. On the assumption that basic communicative acts such as referring and predicating are recognized by speakers of different languages (and if they were not, communication between speakers of different languages would be impossible), the words classed as nouns in descriptions of, say, Russian, and the words classed as nouns in descriptions of, say, English, have in common that speakers pick words from those classes when performing an act of referring. Analogous comments apply to verbs, adjectives and adverbs.

Pragmatic considerations also apply to those aspects of sentence structure concerned with the distribution of information within sentences and within texts. Two issues which we do not have the space to explore further are the function of deictic elements, especially pronouns (see for example, *Deixis; Switch Reference and Related Phenomena; Logophoricity and Long-distance Reflexives*) and of word order (see *Topic and Comment; Topic Focus and Word Order; Word Order and Linearization*).

## 4. Grammaticalization

Where do grammatical categories come from? Or, to put it less mysteriously, how do speakers of languages develop structures for expressing case, aspect, tense, mood, and so on and do all languages have the same word classes? The sources of aspect are reviewed briefly in *Aspect: Further Developments* but since aspect offers a particularly clear view of the development of grammatical categories they can usefully be summarized here. Progressives, as in *Susan was reading a newspaper*, regularly derive from locational constructions; the Middle English equivalent of the preceding example would be along the lines of *Susan was on reading a newspaper*. Perfects regularly derive from constructions expressing result; the English Perfect as in *I have tidied my room*, referring to an action that took place perhaps a week earlier, derives from *I have my room tidied*, referring to the present state of the room. (The Perfect is also a possessive—*I have my room and The room is tidied* combine to yield *I have my room tidied*.) Perfective constructions, which are used to present an action as having been completed, derive from combinations with verbs corresponding to *finish* or from constructions denoting the thorough performance of an action. For instance the Russian verb *soxnut* ‘dry’ has a perfective *vysoxnut* with the prefix *vy-*. Strictly speaking, the perfective form is another lexical item, because the prefix can be interpreted as having the meaning ‘out’; with verbs such as *vyjti* ‘go out’, there is no doubt at all that ‘out’ is the meaning carried by the prefix. The same process began in English but has taken a different route. Particles like *out* and *up*, rather than becoming markers of Perfect or Perfective aspect, have combined with verbs to create phrasal verbs denoting an action carried out thoroughly: *The drunk dried out; The river dried up*.

The evolution of tense is in general more opaque than the evolution of aspect but future tense has been studied in detail over a wide range of languages. Expressions of volition and obligation are typical sources; the English *I will return the book next week* contains *will*, which originally was equivalent to ‘want to’ but acquired the second function of signalling reference to future time. The original meaning persists, however, particularly with first person subjects; in the light of people’s book-returning habits, *I will return the book next week* can be interpreted as a mere expression of intention, with no commitment to action, whereas *The parcel will arrive next week* expresses a reference to a specific (in context) future time. The French future tense forms derive from a Late Latin construction expressing obligation: *cantare habeo* ‘to-sing I have’ became *chanterai*, with *habeo* losing its status of full word and becoming the suffix *-ai*. Movement constructions are another common source of future tense structures. Examples are English, *I’m going to return the book next week*, and French *Je vais passer une semaine à Paris* (I am-going to-spend a week in Paris).

The process of grammaticalization (see *Grammaticalization and Lexicalization* for details of the process) typically affects an independent lexical item with its own lexical content, changing the item to a dependent morpheme. It is assumed that the change takes place via the intermediate stage of a clitic. The change certainly involves a given lexical item losing its syntactic properties and becoming phonologically reduced, as exemplified by the change of Latin *habeo* to the Modern French suffix *-ai* in the above example. That example is relevant to another phenomenon associated with grammaticalization whereby the source item, here *habeo*, continues as an independent lexical item in some syntactic contexts, in possessive structures, while degrading to a suffix in others, the future tense structure. *Habeo* is the source of the independent verb *ai* ‘have’ as in *J’ai un appartement à Port Grimaud* (I have a flat at Port Grimaud) and of the suffix *-ai* in *je chanterai* ‘I will sing’.

Full lexical words do not necessarily degrade all the way to suffixes; in Indo-European it is quite clear that many prepositions and adverbs have their historical origin in nouns. (A convenient overview is given in Miller 1985: 52–84.) Turkish offers particularly clear examples. Consider the sentence in (1):

- Mehmet-in evi-si-ne gel-di-m (1)  
 Mehmet-of house-his-to go-Past-I  
 I went to Mehmet's house

The possessive structure consists of two nouns. The first denotes the possessor and is in the genitive case, here *Mehmetin*. The second has the appropriate possessive suffix, here *-si* in *evisine*. *-E* is the dative suffix and *n* is a phonological device providing a bridge from one vowel to the other. Noun-like adverbial elements are exemplified in (2):

- Topu masa-nın alt-ı-na at-tı (2)  
 Ball table-of underside-its-to throw-Past+he  
 He threw the ball under the table

*Masanin* is the genitive case of *masa* 'table' and *altına* splits into the stem *alt* 'underside', *-ı* 'its' and *-a*, the dative suffix, with *-n* again functioning as a phonological buffer between the two vowels. That is, *Masanin altına* is exactly parallel to *Mehmetin evisine* 'to Mehmet's house', lit. of-Mehmet to-his-house, and is to be analysed as a possessive structure.

In Indo-European languages words that were originally spatial adverbs have given rise to prepositions, verb prefixes and unhappily named 'particles' that combine with verbs as in the above example *dry up*. (There is enough evidence in the shape of various case forms to support the view that these adverbs were nouns.) Homeric Greek offers examples of a single word functioning in different contexts as adverb, preposition and verb prefix. Consider the examples in (3) in which *para* 'beside' has these functions, free adverb in (3a), preposition in (3b) and verb prefix in (3c).

- para de plēthōsi trapezai sitou kai kreion (3a)  
 beside Particle are-full tables of-bread and of-meats  
 beside them are tables laden with bread and meat (*Odyssey* 9: 8–9)

- hē sphin para nēusi tetukto (3b)  
 which to-themselves beside ships was-made  
 which was made for them beside the ships (*Odyssey* 8: 5)

- kai rha hekastō phōti paristamenē phato muthon (3c)  
 and Particle to-each to-man beside-standing spoke  
 and standing beside each man she spoke (*Odyssey* 8: 10)

Spatial constructions are the source of many grammatical categories, but, as reported in Heine *et al.* (1991), other sources or relational words such as prepositions are lexical items denoting body parts; sources of aspectual constructions (see *Aspect: Further Developments*) are process verbs such as *come*, *give*, *take*, and *hold* or posture verbs such as *stand* and *sit*. Mental process verbs such as *say* develop into complementizers and articles develop out of quantifiers such as *one* and *many* or from demonstratives such as *this* and *that*. (French *lella* 'the' developed out of Latin *ille* 'that'.) The work of Heine and his colleagues shows that phenomena known from Indo-European languages are found in the languages of Africa, as well as other phenomena. Heine provides the Ewe examples in (4). (Heine *et al.*'s data is compressed in this discussion.)

- epe megbe fa (4a)  
 his back is-cold

- e-kpo xo-a pe megbe nyuie ma a? (4b)  
 2SG-see house-DEF POSS back nice DEM Q  
 Do you see that nice back wall of the house?

- xo-a megbe le nyuie (4c)  
 house-DEF back be nice  
 The place behind the house is nice

- e-le xo-a megbe (4d)  
 3SG-be house-DEF back  
 He is behind the house

The examples in (4) illustrate the increasingly abstract uses of *megbe* ('back'). The original use is shown in (4a), while (4b) exemplifies the first extension of meaning from the human back to the back part of some object, here a house. A second extension was to denote the place adjacent to the back part of something, hence the translation of (4c) as 'the place behind the house'. This extension is accompanied by the loss of one property of the basic possessive construction in (4b) with



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the dropping of the possessive marker *pe*. (4d) shows *megbe* having acquired the function of a relational word. Further extensions of *megbe* are to a temporal meaning equivalent to *after* and then to what Heine calls a quality; the Ewe phrase *remain behind* is equivalent to the English 'be backward'.

## 5. Typology

The distinction between major and minor criteria for parts of speech/word classes is important for typological work. Typology poses particular problems; adequate research requires data from a large range of languages belonging to a large range of language families from all parts of the world. Such a range of data can only be acquired, in the short term, at the expense of depth and detail; the data-collection and analysis that has been carried out on languages such as Quechua or Dyirbal is almost invisible compared with the vast amount of research on languages such as English, Finnish or Russian. Typological statements once made seem to persist even when proved incorrect by later research.

A good example is offered by Mandarin Chinese, which was, and still is, cited as a language which has no adjectives but just a single class of words that corresponds to the union of verbs and adjectives in English. The sort of data cited in support of this view is exemplified in (5):

Zhèiběn shū hén hǎo (5a)  
this book very good  
This book is very good

Tā chūqu (5b)  
he go-out  
He is going out

(5a) and (5b) both consist of a topic noun phrase, *zhèiběn shū* and *tā*, followed by a predicate phrase or verb phrase, *hén hǎo* and *chūqu*. Although the first corresponds to a copula plus adjective phrase in English, *is very good*, and the second to a verb phrase, *is going out*, the Chinese construction is the same in both. The negative versions are also identical—*bu hén hǎo* and *bu chūqu*. The fact that one major syntactic criterion fails to distinguish a formal class of verbs from a formal class of adjectives in Chinese does not mean that there are no formal differences at all. In fact, a closer look at the language, in particular at some minor criteria, reveals that there is not just one class of verbs in Chinese but a great many, and one of the subclasses corresponds in meaning to adjectives in English and deserves the label of 'stative verb'. Both stative and dynamic Chinese verbs occur as modifiers in noun phrases, as in (6a,b); the stative verb in (6a) combines directly with the head noun *shū* whereas the dynamic verb in (6b) can only combine by means of the particle *de*.

hǎo shū (6a)  
good book  
a good book

lái de rén (6b)  
come Particle people  
the people who are coming'

Stative verbs in Chinese do not occur with the same set of complements as dynamic verbs but they can take the aspectual suffixes *-zhe* (roughly equivalent to the English Progressive) and *-le*, which marks completed action. The occurrence of *-le* forces a change of interpretation; stative verbs denote either a process or a new state. For instance, *Tā hǎo le* is interpreted as 'He is good now' or 'He has become good'. With *-zhe* some stative verbs become causative; *rè* corresponds to *hot* but *Tāng rèzhe ne* (soup hot-*zhe* intensifier) has the interpretation 'The soup is heating' or 'The soup is being heated'. (For details see Heine *et al.* 1977, Chapters VI and VII.) The upshot of the above is that although Chinese does not have a word class of adjectives as sharply distinguished from the class of dynamic verbs by formal criteria as are adjectives and verbs in English, nonetheless the words corresponding to English adjectives are distinguished by various formal properties from the words corresponding to dynamic verbs in English. The proposition that Chinese does not have separate classes of verbs and adjectives turns out to have a grain of truth but to be very misleading.

Many languages are said to have no clear distinction between a class of verbs and a class of prepositions. Again Chinese is one of these languages and again the data are far from clear-cut. The data that give rise to the claim are exemplified in (7).

Tā xiàng běi (7a)  
he go north  
He is going north

Tā xiàng tāmen shuō (7b)  
 he go-to them say  
 He is saying to them

Hagège (1975) argues that there is a separate class of prepositions in Chinese but fails to demonstrate more than that a change is in progress whereby some forms have developed which function as prepositions and have no formal connection with verbs. This had already been argued by Cartier (1970), who shows that many forms are ambivalent between verb and preposition. A number of West African languages also have no clear cut distinction between a class of verbs and a class of prepositions. Lord (1973: 276) cites the example in (8); *wa* is identical in form with a verb base that takes tense and aspect and occurs in other major syntactic structures in which full verbs occur (see further in *Serial Verbs*).

mo mu iwe wa ile (8)  
 I take book come house  
 I brought a book to the house'

Finally in this discussion of the typology of word classes we turn to a language which has been cited as a language with only one class of words. The language is Nootka, and it has been of general interest since Hockett (1958) presented the examples in (9).

mamokma qo'as'i (9a)  
 he-is-working the-man  
 The man is working

qo'asma mamok' (9b)  
 He-is-a-man the-working  
 The worker is a man'

Hockett stated that Nootka had two classes of words, inflected and uninflected but as with Chinese and its alleged lack of a separate formal class of adjectives, closer examination of Nootka data reveals formal criteria that distinguish other classes of words. However that may be, (9a,b) raise two crucial points. The first is that even Nootka distinguishes clearly between the referential part of the clause and the predication part, the latter being marked by *ma*. The second is that discussions of word classes/parts of speech must draw a firm distinction between lexical items and the slots in syntactic constructions which the lexical items occupy. There are many lexical items in English which occur in both verb and noun slots: *They manned the ship: They shipped the men*. With respect to these lexical items, as lexemes, English is not unlike Nootka. English is unlike Nootka in having many sets of lexical items such as *give* and *gift*, *concede* and *concession*, with one item occurring in verb slots and the other occurring in noun slots. The problem is that we use terms like 'noun' and 'verb' for either the lexical item or the syntactic slot or for a combination of the two. No harm results in the analysis of languages such as English but great care is required in the analysis of languages such as Nootka.

## 6. Grammatical Categories and Syntactic Theory

The way grammatical categories are exploited in particular syntactic theories is explored in more detail in the *Concise Encyclopedia of Syntactic Theories* (Brown and Miller 1996), a companion to this volume. We can however demonstrate the prominent position they occupy by mentioning all too briefly how they are treated in two rather different syntactic theories: 'Role and Reference Grammar' (see Van Valin 1996; Van Valin and La Polla 1997) and in the 'Principles and Parameters' (cf. Freidin 1996) and 'Minimalist' (cf. Atkinson 1996) approaches of Generative Grammar.

Role and Reference grammar declares that it has a 'communication-and-cognition' perspective on grammar (Van Valin and La Polla 1997: 11), that is it is interested to describe and explain not only the formal syntactic patterns of a language, but also the way these reflect speakers' cognitive abilities and communicative potentialities. It is presented as a version of 'universal grammar', that is it aims to produce a descriptive and explanatory account of any human language (rather than being guided by a concern for some particular language, Greek say, or even some family of languages, perhaps the familiar Indo-European languages). It is therefore interesting and instructive to observe that it deals with the familiar lexical and phrasal categories associated with nouns, verbs and the like, with familiar grammatical categories like tense, number, negation and so on, and that the criteria involved in establishing these categories are morphological, syntactic, semantic and pragmatic. The theory centrally involves three levels of structure: clause structure, semantic structure and focus structure. Clause structure involves a 'layered' account of constituency, producing a constituent structure analysis tree involving the usual phrasal categories though in a much 'flatter' configuration than is typically found in generative grammar. Each layer is associated with one or more 'operator' projections, the operators having scope over constituents in that layer. Thus the innermost layer is the 'nucleus' consisting of just the predicator and it is associated with aspect and 'narrow scope' negation; the 'core', consisting of the predicator and its arguments is characterized by deontic modality and 'wide scope' negation;

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the 'clause', consisting of the core and initial and final positions within the sentence is associated with epistemic modality, evidentials, tense and illocutionary force. Semantic structure is a representation of the aspectual type of the verb and of the participants associated with it, agent, patient and the like: what we have referred to earlier as the 'propositional content' of the clause. Focus structure deals with the distribution of information within the clause for particular communicative effects and the consequences this has for word order.

Freidin (1996: 119), writing on the 'Principles and Parameters' model of generative grammar, quotes Chomsky's view that the main task of linguistic theory is 'to develop an account of linguistic universals that, on the one hand, will not be falsified by the actual diversity of languages and, on the other, will be sufficiently rich and explicit to account for the rapidity and uniformity of language learning and the remarkable complexity and range of the generative grammars that are the product of learning'. This focus is strikingly different from that of Role and Reference Grammar, yet once more we find ourselves dealing once again with the same range of categories. In the model Freidin is expounding, we find a distinction drawn between lexical categories (as in other accounts, the familiar major parts of speech, noun verb and so on: the 'contentive' categories that have semantic sense properties) and functional categories (the grammatical categories of tense, person, gender, number case and the like). In this theory the major lexical categories project phrasal categories (noun phrase, verb phrase and the like) with a complex internal structure including a 'specifier' node, which is the locus for certain grammatical categories, determiners in the noun phrase, intensifiers in the adjective phrase and so on. A few crucial functional categories themselves head projections: notably I (for inflection) and C (for complementizer). I is a complex category accounting for tense, modality and negation, and C accounts for sentence mood (interrogative and the like) in main and subordinate clauses. Developments of the theory lead to more functional categories heading projections, but the distinction between lexical and functional categories is retained, not least because the 'parameters' of this model are 'the loci of possible grammatical variation in individual grammars and specify the range of this variation' (Atkinson 1994: 2941) 'with parameterization being restricted to the properties of functional categories' (Atkinson 1994: 2942). More recent work in generative grammar within the 'Minimalist' program develops these insights (see Atkinson 1996) in ways we do not have space to explore here. Returning to the point made at the start of this introduction, we conclude with the observation that the centrality of grammatical categories is demonstrated by their longevity, their application in typology, cognitive science and philosophy as well as grammar, and their essential role in state-of-the-art formal models.

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# Adjectives

R. M. W. Dixon

'Adjective' is a major word class, containing words that describe properties or qualities. This article surveys adjective classes across the languages of the world, looking at their semantic content, and their similarities to, and differences from, noun and verb classes.

## 1. Types of Adjective

In its widest sense, adjective can be used of any constituent that modifies a head noun within a noun phrase. In English this includes:

- (a) predeterminers, for example, *all* (*of*);
- (b) determiners, which include articles (*the*, *a*), and demonstratives (*this*, *those*);
- (c) superlatives and comparatives derived from descriptive adjectives (*tallest*, *most beautiful*; *taller*, *more beautiful*);
- (d) quantifiers (*many*, *few*), cardinal (*four*), and ordinal (*fourth*) numbers;
- (e) descriptive adjectives (*red*, *long*, *clever*);
- (f) modifiers describing composition (*wooden*, *vegetable*), origin/style (*British*), beneficiary (e.g., *dog in dog food*).

In addition, possessive forms of pronouns (*my*), of nouns (*John's*), and of noun phrases (*the King of England's*) have 'adjectival' function, as determiners.

This article deals with descriptive adjectives, which may be distinguished from predeterminers, determiners, and numbers in that they can generally be used both attributively (*this heavy boomerang*), and predicatively (*This boomerang is heavy*).

In many languages numbers behave grammatically like descriptive adjectives, but this is by no means universal. Semitic languages typically have 'one' and 'two' as adjectives but 'three' to 'ten' as abstract nouns (Gray 1934: 68). In Fijian numbers are best treated as a distinct word-class, grammatically most similar to verbs (Dixon 1988: 141–50). (Numbers are not further discussed in this article; see *Number and Number Systems*.)

## 2. Word Order

Greenberg (1966: 85) suggested a 'near universal': 'With overwhelmingly more than chance frequency, languages with dominant order VSO have the adjective after the noun.' However, recent work has thrown doubt on this correlation (see Comrie 1989: 103, and reference there to Dryer 1988). It seems that there is no predictable connection between the order of subject, object, and verb in a clause, and of descriptive adjective and noun in a noun phrase.

Some of the other universals Greenberg put forward relating to adjectives do appear to stand up better.

*Universal 20.* When any or all of the items (demonstrative, numeral, and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite.

And

*Universal 19.* When the general rule is that the descriptive adjective follows [the head noun], there may be a minority of adjectives which usually precede, but when the general rule is that descriptive adjectives precede, there are no exceptions.

In languages such as French and Spanish, which have most adjectives following the noun but allow a few also to precede it, this alternation carries a nice semantic differentiation. It can be appreciated by comparison with English.

Jespersen (1924: 168–69) suggested that 'the notional distinction between active and passive also applies to some adjectives derived from or connected with verbs.' For instance, *desirous* has an active meaning ('wanting'), and *desirable* a passive one ('being wanted'). He noted that *curious* has both an active (*she was curious about the noise*), and a passive (*it was a curious noise*) sense. In French, however, *curieux* precedes the noun in the passive and follows it in the active sense—*un curieux homme* 'a strange man,' and *un homme curieux* 'an inquisitive man.' Similarly, *dear* in English can mean (a) 'loved,' or (b) 'expensive,' and *common* can mean (a) 'unified,' or (b) 'ordinary.' The corresponding French adjectives *cher* and *commun* precede the noun in sense (a) and follow it in sense (b) (Waugh 1977: 182–83).

In many (but not all) languages a noun phrase often includes a string of descriptive adjectives; there is usually a preferred order. In English, for instance, the unmarked order is: Value (e.g., *good*), Dimension (*big*), Physical Property (*soft*), Speed (*slow*), Human Propensity (*stupid*), Age (*old*), Color (*white*). Similar orderings are reported for Hungarian and for the Dravidian language, Telugu. In the Papuan language, Selepet, the order in which adjectives follow the head noun is: Sex, Color, Age, Human Propensity/Value, Physical Property, Dimension (and then Number). This is almost the mirror image of the prehead adjective order in English and other languages, the only important difference being the placement of Value items (see Dixon 1982: 24–6; McElhanon 1972: 14, 81).

## 3. Adjectives, Nouns, and Verbs

A language must have words for describing:

- (a) people, animals, and things (what can be called participants), e.g., *boy*, *forest*, *gold*;
- (b) properties of participants, e.g., *long*, *good*, *new*;

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(c) activities involving participants, e.g., *run, eat, hit, talk*.

Typically, (a) are coded through a class of nouns, (b) by a class of (descriptive) adjectives, and (c) by a class of verbs (although word classes must be established on grammatical, not semantic, criteria—see Sect. 6 below).

The prototypical meanings of noun, adjective, and verb classes are clear enough (as shown by the examples just quoted), but there can be 'fuzzy areas' in between. Thus, corresponding to the adjectives *male* and *female* in English, Russian only has nouns *samec* and *samka*. Where English has verbs *divide, fold, and lean*, the Australian language Dyirbal has only adjectives *nyarri* 'divided,' *wujun* 'folded,' *yulgarra* 'leaning' (verbs can be formed from these by adding appropriate derivational affixes, e.g., *nyarri-ma* 'make divided').

There can also be overlap between the word classes. There are available in English adjectives such as *sick* and *ill*, and also nouns such as *invalid*. The noun *invalid* is used to say what class of person someone belongs to (rather like *aristocrat* or *teacher*); it tends to be used of a permanent condition. Adjectives *sick* and *ill* describe a characteristic of a person, which is likely only to be temporary. But it is interesting that in English *deaf* and *blind* (describing conditions that are generally permanent) are adjectives while *cripple* is a noun. There is illuminating discussion of this in Wierzbicka (1986).

There can also be overlap between verb and adjective classes. Compare *That he told a lie doesn't matter* and *That he told a lie isn't important* (or, with the complement clause from subject slot extraposed to the end of the sentence, *It doesn't matter/isn't important that he told a lie*). Some adjectives can be described as 'transitive,' with the 'object' introduced by a preposition; there is often a verb with similar meaning—compare *fond of* with *like*, and *eager for* with *want*.

In cases like this adjective and verb have a similar meaning, but there is always a subtle semantic distinction. Compare the verb *to fear*, with adjectives *afraid* and *frightened* (the latter is related to the past participle of the transitive verb *frighten*). *Frightened* and *afraid* describe the state of mind of someone when they are actually in contact with something scary (*I was frightened when Bruno knocked on the door*), whereas *fear* indicates a general feeling in connection with something that may happen (*I fear Bruno's being released from jail*).

Languages differ in the kind of semantic overlap they have between different word classes. In Dyirbal there is very little overlap between noun and adjective, but a great amount (far more than in English), between adjective and verb. Dyirbal has distinct lexemes for *jalgi* 'to cook' and *mundan* 'cooked,' *nanda* 'to tie' and *jagu* 'tied,' *munja* 'to be hungry' and *ngamir* 'hungry,' among many other examples.

## 4. Adjectives and Adverbs

In many languages there is a class of adverbs which describe the qualities of activities in much the same way that adjectives describe the qualities of participants. It is very common for adverbs to be morphologically derived from adjectives. This can involve a prefix, such as *vaka-* in Fijian, e.g., *balavu* 'long,' *vaka-balavu* 'lengthily'; *vinaka* 'good,' *vaka-vinaka* 'well, properly.' Or it can be by a suffix such as *-mente* in Spanish or *-ly* in English—compare *stupid person with behave stupidly, and the tortoise is a slow animal with the tortoise moves slowly*.

Not all adjectives form adverbs. In English there are adverbs corresponding to adjectives of Value (e.g., *bad-ly*), Speed (*quick-ly*), and Human Propensity (*clever-ly, rude-ly, generous-ly*), but none relating to adjectives of Age (*new, young, old*). Some Dimension and Physical Property adjectives do form adverbs, but these tend to be used in a metaphorical sense, e.g., *think deeply, hotly deny, sweetly request*.

In some languages adverbs have a more central role. For Hixkaryana, a language of the Carib family, spoken in north Brazil, Derbyshire (1985: 10–15) describes a class of words which can modify both verbs and nouns; he suggests that they are best considered as primarily adverbs, with a secondary adjectival function.

## 5. Derived Adjectives

Givón (1970: 816) remarked of English that 'of all adjectives in the dictionary, only a small number are *original* or *overtly underived*; the great bulk are morphologically derived from either nouns or verbs.' There are also derived nouns and verbs, but there appear to be more derivations forming adjectives than for the other word classes. And it seems that this is a universal feature of languages. Indeed, as described in Sect. 8.5, some languages have only a dozen or so simple adjectives, augmented by many derivations.

Descriptive adjectives in English differ from determiners and numbers in that they can generally (a) be used attributively (*that jealous man*), or predicatively (*that man is jealous*); (b) occur with the submodifier *very*; (c) form a comparative (with *more* or *-er*) and a superlative (with *most* or *-est*).

Descriptive adjectives are most typically used with simple, underived nouns, e.g., *thick forest, hard metal, clever woman, fast car*. There are in English many nouns derived from verbs and these often take adjectives that are derived from nouns, e.g., *economic lift* relates to *lift the economy*, *parental refusal* to *parents refuse*, and *national leader* to *lead the nation*. Denominal forms like *economic, parental, and national* lack many of the defining properties of descriptive adjectives—they are seldom used predicatively (?*the refusal was parental*), or with *very*, or in comparatives or superlatives. They form a close-knit semantic unit with the following deverbal noun and, in

view of this, can be called 'classifying adjectives' (see Warren 1984 and the full discussion therein). *Eventual*, as in *eventual winner*, also belongs to this class; one cannot say \**the winner was eventual*, or \**very eventual*, or \**more eventual*. Note that here there is an adverb *eventually* which is in form derived from the adjective, although in terms of meaning the adverbial sense must be considered prior (that is, *eventually win* underlies *eventual winner*).

Some underived adjectives can have two senses—one, of a 'classifying' sort, is only used with nouns derived from verbs while the other, descriptive, sense applies with any kind of noun. Thus *poor teacher* can refer to (a) someone who *teaches poorly* (i.e., inadequately), or (b) someone who teaches and is also pitiable or without money; but *poor man* only has sense (b). Similarly, *serious man* refers to (b) someone who is earnest and thoughtful, whereas *serious drinker* is likely to have meaning (a) someone who drinks in a determined fashion (although it could also have sense (b), someone who is a drinker and also earnest and thoughtful). Interestingly, when these adjectives are used predicatively—*that teacher is poor*, *this drinker is serious*—they may only have sense (b). This is as expected—classifying adjectives (and, here, the classifying sense of a descriptive adjective)—may not generally be used predicatively.

Languages differ in the extent that they form 'classifying adjectives' from nouns, etc. In some languages there is no construction parallel to *national leader*—only *leader of the nation*, or *the person who leads the nation*. The remainder of this article is concerned just with descriptive adjectives.

## 6. Establishing Word Classes

Word classes can *not* be established on semantic criteria, or else words which have a closely similar meaning in different languages would always belong to the same class. That this is not so is illustrated in the case of adjectives *male* and *female* in English and their nearest translation equivalents in Russian, the nouns *samec* and *samka*; and in the case of verbs *divide*, *fold*, and *lean* in English and adjectives *nyarri*, *wujun*, and *yulgarra* in Dyirbal.

A linguist must establish word classes for a given language using grammatical criteria appropriate to that language. For Latin there is class 1, consisting of words that inflect for number and case; class 2, words that inflect for number, case, and gender; and class 3, words that inflect for tense, voice, aspect, mood, etc. In English, class A consists of words that may take the endings *-ing* and *-ed* (or allomorphs of the latter); class B of words that can be preceded by an article and need not be followed by anything; and class C of words that can be preceded by an article and must be followed by a word of class B. Quite different criteria are used, in terms of the rather different grammatical structures of these two languages (English has

no case inflections, save on pronouns; Latin has no articles; and so on).

Class 1 in Latin is then identified with class B in English, and both are called 'noun', similarly 2 with C 'adjective,' and 3 with A 'verb.' This cross-linguistic identification is made (and the names given) on semantic grounds. Put very roughly, nouns in both languages refer to participants, adjectives to properties of participants, and verbs to activities. Most nouns in Latin are translated by nouns in English, and so on. But there are some differences—*hunger* is basically a noun in English, and there is a basic verb *ēsuriō* 'to be hungry' in Latin (although both languages have derived adjectives, *hungry* and *ēsuriens*, that are used a great deal).

For almost every language there are internal grammatical criteria for recognizing three word classes: noun, verb, and adjective. But there is considerable variation in (a) the size of the adjective class; and (b) whether the adjective class is grammatically similar to the noun class, or to the verb class, or to both, or shows no strong similarity to either.

## 7. Grammatical Orientation of the Adjective Class

Words describing properties of participants show certain similarities to and certain differences from both words describing participants and words describing activities of participants.

- (a) Verbs describe activities, which generally involve movement and/or change, and are normally extended in, and delimited in, time. A noun typically describes a thing (or animal or person), for which the dimension of time is irrelevant. Adjectives describe properties of things most of which do not involve change but are relatively permanent, e.g., *big*, *red*, *good*. In terms of this semantic dimension, adjectives show more similarities to nouns than to verbs.
- (b) A noun is generally the central topic of a discourse, and comment on it can either be in terms of some activity (through a verb), or of some property (through an adjective). This establishes a point of similarity between verb and adjective.
- (c) Both verb and adjective can be grammatically linked to a noun in one of two ways: (i) within a noun phrase, as further specification of the reference of the noun—this may involve an adjective or a participial form of a verb as a modifying word (e.g., *angry lion*, *singing nun*), or an adjective or verb as predicate of a relative clause (*lion which is angry*, *nun who sings*); or (ii) verb or adjective is main clause predicate which acts as 'comment' on a given noun as 'topic' (e.g., *That lion is angry*, *This nun sings in her bath*).

Both verb and adjective may have either of these functions but it is a fact that verbs are more often

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found in slot (c(ii)) than are adjectives, and adjectives are more often found in slot (c(i)) than are verbs. This follows from their semantic natures—properties are more often used to restrict reference, whereas activities are more likely to be comment-worthy. Thus, adjectives are more likely than verbs to occur with a noun in a noun phrase (indeed, adjectives may be used as modifying words, with verbs being restricted to modification through the medium of a relative clause—and this can apply even in languages where adjective is grammatically close to verb).

Languages can be divided into five major types, according to the ways in which their grammars treat the class of adjectives.

- (1) There is an open class of adjectives which has grammatical properties very similar to those of nouns; for example, a modifying adjective may agree with a head noun in inflectional categories such as case, gender, number. In many—but not all—languages of this type, when an adjective is used predicatively it requires the verb *to be*.
- (2) There is an open class of adjectives which has grammatical properties very similar to those of verbs; for example, when an adjective is used predicatively it inflects on the same (or similar) pattern to a verb (and there is then no need for inclusion of a verb *to be*).
- (3) There is an open class of adjectives which has grammatical properties that are effectively the sum of those of noun and of verb—when an adjective occurs in a noun phrase it can take the same inflections as a noun, and when it occurs as head of a predicate it can inflect in the same way as a verb.
- (4) There is an open class of adjectives which has grammatical properties significantly different from those of both nouns and verbs.
- (5) There is a small, closed class of adjectives describing certain core properties. Other properties are dealt with by words belonging to the noun and verb classes.

Almost all languages fall into one of these five types. There are, however, odd exceptions. In a most important paper Backhouse (1984) has shown that Japanese has an open class of adjectives which is in two parts, one with morphological similarity to nouns and the other with morphological similarity to verbs. There are syntactic properties common to the two subsets which link them together as a single adjective class.

### 8. Types of Adjective Class

It is not an easy matter to investigate the grammatical status of the adjective class across a range of languages. For languages of type 1 grammarians sometimes say 'all adjectives are nouns,' and for those of type 2 'all adjectives are verbs.' Indeed, there was a

tradition of grammar-writing in North America which typically began by saying something like 'there are just two open classes, noun and verb,' with no mention of adjectives. It is then necessary to search through the examples and the vocabulary to discover whether adjectival concepts are included in the noun class, or in the verb class, or split between these.

Such grammatical treatment is superficial, often paying attention only to morphological properties and ignoring syntax and semantics. For almost every language that has been investigated in depth criteria have been found to distinguish an adjective class from both nouns and verbs (an exception may be the Australian language Warlpiri—Hale 1983: 33–4).

#### 8.1 Type 1: Adjective Class Grammatically Similar to Noun Class

In Latin and Greek, adjectives are morphologically very similar to nouns, inflecting for case and number. Indeed, the first Greek grammarians (founders of the Western tradition of linguistics) silently included adjectives within the class of nouns, as 'a part of speech having case inflections, signifying a person or thing' (Robins 1967: 33).

A distinction between noun-substantives (now called nouns) and noun-adjectives (modern adjectives) was not made until the Middle Ages; the grammatical criterion given was gender—each noun in Latin has a single gender, but an adjective may occur in any gender. The grammarian Thomas of Erfurt (ca. 1300) stated that an adjective has no gender in itself, but obtains it from the noun it modifies (Bursill-Hall 1972: 181). Criteria involving gender or 'noun class' help to distinguish adjectives from nouns in languages from many parts of the world. Discussing Arapesh, a Papuan language, Fortune (1942: 15) states: 'The adjective may be clearly defined as a word with a constant root or stem form, which is always used with a variable suffix in agreement with the noun class of the noun qualified by it.'

It is surprising to read in Jespersen (1924: 72) that Finnish has no criteria to distinguish noun and adjective, since it does not have genders. As if there couldn't be all manner of other possible criteria! Lehtinen (1963: 249) gives a perfectly adequate criterion: adjectives in Finnish do not take possessive suffixes; when a possessed noun has a modifying adjective, there is no concord of the possessive suffix.

Some languages that mark grammatical relations by case demand that each word in a noun phrase show the appropriate case inflection (Latin is of this type). In other languages case inflection may go onto just one word in a noun phrase—sometimes just on the head, or else just on the last word in the phrase. If adjectives precede a head noun and case is marked only on the last word of a noun phrase then adjectives will appear to be indeclinable when in modifying function. This applies in Buryat from the Mongolian



family (Poppe 1960: 76). But a noun phrase can consist of an adjective alone, and then it does take case inflection. Criteria given by Poppe to distinguish the adjective class in Buryat include: only adjectives can occur in comparative- and superlative-type constructions, can occur with adverbs and intensifying particles (similar to *very*, *absolutely*), and can function as adverbs (with or without derivational suffixes).

In the Cushitic language Bilin case inflection again goes onto just the final word in a noun phrase, but here modifiers generally follow the head. If an adjective is present it will take case inflection and a noun only does so if there is no following modifier. Adjectives can be distinguished from nouns in Bilin on the criterion that if a noun is used as modifier in a noun phrase it must be in genitive form. Note also that although nouns and adjectives inflect for the same categories of number and gender, the forms of the inflections are quite different (Palmer 1967).

In the Australian language Ngiyambaa, nouns and adjectives have the same derivational and inflectional morphology but can be distinguished in terms of reduplication, which carries a meaning 'more-or-less' or 'somewhat.' Only adjectives reduplicate. Donaldson (1980: 70) reports that when rejecting a reduplicated form of a noun her informant would explain that 'either it is that or it isn't.' 'Thus \**miri-miri* was rejected, because one cannot have a "more-or-less dog," while *gi:dja-gi:djan* "more-or-less green, greenish" is an acceptable form.' Alpher (1991: 22–6) provides an exemplary account of criteria for distinguishing noun from adjective in the Australian language Yir-Yoront

In some languages adjective and noun have similar syntactic possibilities—a noun phrase can consist of noun plus adjective, or just noun, or just adjective; this applies to Buryat and to Spanish, for example. When an adjective cannot generally occur in a noun phrase without a noun (as in English), this provides a syntactic criterion for distinguishing the two word classes. And there can be subtler syntactic criteria. Roberts (1987: 155) reports that in the Papuan language Amele a noun phrase can consist of a noun followed by one or more adjectives, or else it can consist of just a single adjective—if the noun phrase has an adjective as head it cannot also have an adjective as modifier.

Surveying the languages of the world, one finds that adjectives tend to be treated in a similar way to nouns in languages where there is a predominant 'dependent marking' pattern with syntactic function being marked on the arguments of a predicate (see Nichols 1986 for the distinction between 'dependent' and 'head' marking). This covers most languages of Europe, North Africa, North Asia, and Australia as well as Tarascan from Mexico, and Yokuts, Southern Sierra Miwok, and Sahaptin from the western USA.

## 8.2 Type 2: Adjective Class Grammatically Similar to Verb Class

A grammatical association of adjective class with verb class tends to be found in languages that do not have dependent marking: those with 'head marking'—where syntactic function is shown by pronominal affixes on the predicate which 'cross-reference' subject, object, etc.—and those where syntactic function is shown only through word order. Languages of type 2 are found over most of North America, East and Southeast Asia, and the Pacific.

Just as in languages of type 1 many grammarians have said that adjectives are simply a kind of noun, so in languages of type 2 they have been reluctant to recognize adjectives as a word class distinct from verb. One finds comments like 'adjectival meanings are expressed primarily by verbs' in modern standard Chinese (Schachter 1985: 17–18). There are, it is true, many points of grammatical similarity between adjective and verb classes in Chinese but Xu (1988) has been able to provide a wealth of criteria for distinguishing between the two classes. They take different sets of derivational affixes; have different choices of aspect markers; only adjectives modify verbs; reduplication carries a different semantic effect: with verbs it indicates 'do a little bit' whereas with adjectives it indicates vivid description, 'really' or 'very'; and so on.

Linguists educated in the Western tradition are nowadays happy enough to recognize a class of adjectives even though it is morphologically similar to nouns (as in Spanish, where adjectives and nouns both inflect for gender and number, and neither for case). But they seem reluctant to employ the name 'adjective' for a word class that is grammatically similar to verbs. In describing languages of the Pacific Islands a tradition has grown up of preferring a label 'stative verb' or 'stative' (see Buse 1965). This is rather like insisting on a label such as 'quality noun' for adjectives in Spanish. It is sometimes said that in languages of this region 'all adjectives are verbs.' However, the most perceptive analyses provide ample criteria for distinguishing adjective as a separate class. In the case of Ponapean, Rehag (1981: 196ff) states that only adjectives may occur with the stative marker *me*; only adjectives can occur before a number within a noun phrase (they may also follow the number; verbs must follow the number). And so on. (But Rehag still does call adjectives a subclass of intransitive verbs, the other subclass being 'general intransitive verbs'.)

The grammatical criteria for distinguishing between verb and adjective classes in languages of type 2 are varied. Discussing Toba-Batak, a western Austronesian language, Nababan (1981: 71) notes that only adjectives, not verbs, inflect for degree, with comparative *UM-* or *-an* and excessive *pa-* ... *-hu*. But it must be noted that 'forming comparatives' is only sometimes a criterion to distinguishing between noun classes. Some languages have no affix or construction

type that can be recognized as comparative. Other times there is one, but it may apply to nouns as well as to adjectives (as in Dyirbal, see Dixon 1972: 26), or also to verbs, or to a subset of verbs. Xu (1988) reports that in Chinese comparatives can be formed for most adjectives and also for verbs of emotion, such as 'to like.' In Bini (also called edo, Kwa group of Niger-Congo), comparison can apply to adjectives and also, it seems, to all verbs; the comparative of 'dances' means 'dances better' (Omoruyi 1986: 291).

The distinguishing criteria can be wholly or partly syntactic. In Malay, adjectives and verbs behave similarly when head of a predicate, but differently within a noun phrase—an adjective may modify a noun directly, whereas a verb must be put into a special nominalized form (Macdonald 1976: 92).

In some languages of type 2 an adjective may be used in a noun phrase in two ways—within a relative clause (i.e., like a verb), or just alone, as a modifier. Hagège (1974: 130) describes how in Tupuri (spoken in Chad), a noun phrase with an adjective used in a simple attributive manner (e.g., wi(l) kl̩ 'child little') has an indefinite sense (a little child) while a noun phrase with an adjective used within a relative clause (e.g., wi(l) mā: kl̩ 'child who little') carries a definite sense (the little child).

There can be syntactic consequences arising from whether the adjective class is grammatically similar to the verb class, in type 2 languages, or to the noun class, in type 1. In each kind of language an adjective *may* be used attributively or predicatively, but there is sometimes a preference for predicative use in a type 2 language. A Korean will prefer a construction such as *sarami manso* 'man is numerous,' where English would say *there are many men* (Ramstedt 1968: 35).

### 8.3 Type 3: Adjective Class Combining the Grammatical Properties of Noun and Verb Classes

There are typically a number of derivational processes for forming stems of one word class from roots of another—for example, in English the derived noun *depth*, and verb *deepen*, based on the adjective *deep*. Languages of type 1 typically have processes for deriving verbs from adjectives—in Dyirbal *bulgan* is 'big,' *bulgan-bi-* 'to become big,' and *bulgan-ma-* 'to make big.' And languages of type 2 typically have processes for deriving nominal stems from adjectival roots. The pioneer linguist Sparkman stated that in Luiseño, a Uto-Aztec language, attributive adjectives are 'derived from verbs of motion, extension, shape, textural or mass condition, color or appearance, and the like, by one of several participial suffixes' (Kroeber and Grace 1960: 59).

Adjectives are like nouns in some ways and like verbs in others. It would surely be natural to have adjectival roots take the inflectional possibilities of nouns when used in a noun phrase and of verbs when used predicatively (without the intervention of deri-

vational affixes, as is the case in Dyirbal and Luiseño). The adjective class could then be regarded as the intersection of noun and verb classes.

Languages of this type are not common, but they are found. For Bashkir, from the northwest branch of the Turkic family, Poppe (1964: 56) mentions that adjectives (a) inflect like a noun when noun phrase head; (b) do not decline when acting as modifier before a noun (Bashkir being a language in which inflections go only onto the last word in a noun phrase); (c) take predicative affixes (in the way a verb does) when functioning as predicate head; and (d) may also function as adverbs. This suggests the intersection of noun—property (a)—and verb—property (c)—classes, together with an additional property, (d). Languages from the Berber branch of the Afroasiatic family are also of type 3, with similar properties (see, for example, Basset 1952: 20–1).

### 8.4 Type 4: Adjective Class Grammatically Close Neither Noun nor Verb Classes

It is quite rare to encounter an adjective class whose grammatical properties are rather different from those of both the verb and noun classes. In his classic grammar of Takelma, spoken in Oregon, Sapir (1922: 255–56) nowhere says how large the adjective class is (it is assumed, in the absence of a statement to the contrary, that it is an open class), but he stresses that it has specific defining properties and can *not* be grouped with either noun or verb. Adjectives in Takelma have their own syntactic properties, a distinct set of affixes, and their own peculiar method of forming plurals. Adjectives are like verbs in several ways (e.g., frequently preceded by body-part prefixes) but they cannot be used predicatively by themselves (requiring a verb 'to be'), nor can they take verbal pronominal suffixes. They are like nouns and pronouns in taking the exclusive suffix *-t'a* but they cannot take nominal possessive suffixes (although they can form a compound with a noun, and the whole then takes possessive suffixes).

The older Indo-European languages, and most modern members of this family, are of type 1, with adjectives being grammatically close to nouns. English, however, has developed into a language of type 3. All gender inflection has been lost while genitive and number marking are retained only on nouns, not on adjectives. Other languages in which the adjective class has no strong grammatical similarities to either noun or verb classes include Fijian (Dixon 1988: 238), and the Mayan languages Mam (England 1983) and Tzutujil (Dayley 1985).

### 8.5 Type 5: Small, Closed Adjective Class

There are a fair number of languages which do have a separate adjective class but it has a limited number of members—anything between about five and around one hundred. Languages of this type are found in

southern and eastern India, over a large part of Africa, across much of Papua New Guinea, with a few representatives in the Americas and in the Pacific.

In Yimas, a Papuan language of the Lower Sepik family, Foley (1991) recognizes a class of just five adjectives as shown in (1).

<i>kpa</i> 'big'	<i>yua</i> 'good'	<i>ma</i> 'other'
<i>waca</i> 'small'	<i>mama</i> 'bad'	

(1)

(In fact, *waca* and *mama* belong both to the class of adjectives and to a class of *adjectival verbs*.)

Maduga (1976) reconstructs an earlier stage of Yoruba (Kwa branch of Niger-Congo) as having had just 12 adjectives as in (2).

<i>nilá</i> 'large'	<i>rere</i> 'good'	<i>titun</i> 'new'
<i>kere</i> 'small'	<i>dára</i> 'good'	<i>dúdu</i> 'black'
<i>kúru</i> 'short'	<i>burú</i> 'bad'	<i>funfun</i> 'white'
<i>tinrin</i> 'thin'	<i>tutù</i> 'cold'	<i>pupa</i> 'red'

(2)

In the Iroquoian language, Cherokee, there are perhaps seven basic adjectives (Lindsey and Scancarrelli 1985, and personal communication), shown in (3).

<i>e:</i> 'kwa 'large'	<i>o:</i> 'sta 'good'	<i>u:</i> we: 'thi 'old'
<i>u:</i> sti 'little'	<i>u:</i> yo: 'oi 'bad'	(of inanimates)
<i>a:</i> yanu: 'li 'fast'	<i>u:</i> skano: 'li 'slow'	

(3)

Comparison of small adjective classes across the languages of the world reveals a remarkable similarity of semantic content. A lexeme 'big/large' appears in virtually every closed adjective class, followed in order of popularity by 'small,' 'long,' 'short,' 'new,' 'old,' 'good,' 'bad,' 'black,' 'white,' 'red,' and 'raw, green, unripe.' It will be seen that restricted adjective classes are likely to include words referring to Dimension, Age, Value, and Color.

There is then the important question of how languages with a small adjective class deal with the other concepts that are expressed by adjectives in languages with an open class. This issue was investigated in a paper 'Where have all the adjectives gone?' (Dixon 1977). The conclusion is that:

- Words referring to what is called 'Human Propensities' are typically associated with the noun class. In Swahili, for instance, there are nouns such as *furaha* 'joy, happiness,' and *kiburi* 'pride, conceit,' which are used attributively by means of the possessive particle *a* (thus, *a kiburi*, literally 'with happiness').
- Words referring to physical properties typically belong to the verb class. Thus in Alamblak (Bruce 1984, and personal communication) there are verbs *nambur* 'to be sharp,' *korha* 'to be heavy,' and *kkah* 'to be fiery hot,' etc.

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## Adverbs and Adverbials

J. van der Auwera

The term 'adverb' comes down from antiquity. It is the English cognate to the *adverbium* of the Roman grammarians, who themselves translated the Greek *epirrĥēma*. The term transparently suggests that an adverb is a word that is placed with the verb or, in semantic terms, modifies the verb. Though it is now realized that the link between verb and adverb is not as close as suggested, the term remains in general usage and has even led to new terminology, such as the noun 'adverbial,' which is generally used to denote both simple adverbs as well as phrases and clauses that have the same function as adverbs.

### 1. Adverbs

#### 1.1 A Separate Word Class

The familiarity of the term 'adverb' is deceptive, for the class of adverbs does not have a homogeneous membership and sometimes words seem to be assigned to the class of adverbs for no better reason than that they do not fit any other class. This does not mean that there are no criteria, but only that they seem more problematic than for other categories. Consider the uncontroversially adverbial *carefully* in *John had carefully opened the door*. Here *carefully* can be argued to have the following four properties: (a) it is invariable, (b) it modifies the verb, (c) it is optional, and (d) it occurs in a position that is reserved for adverbs. Each of these properties is strongly associated with adverbiality and is a candidate for being criterial. Yet each property is problematic.

#### 1.2 An Adverb is Invariable

It is correct that *carefully* is invariable, in the sense that its shape does not vary depending on case, number, and gender, the dimensions that are typically relevant for nouns and adjectives, nor for person, voice, tense, or aspect, the typically verbal dimensions. Nor does *carefully* have any morphological variation for degrees of comparison, the comparative being *more carefully* rather than *\*carefullier*, but this is not a general property of the English adverb as such (consider *farther* or *further* rather than *\*more far*, or *sooner* rather than *\*more soon*) and if one aims at a cross-linguistic validity, one should be aware that in a closely related language such as Dutch, adverbs allow diminutives. Thus Dutch *voorzichtig* 'carefully' allows a diminutive *voorzichtigjes*. The obvious amendment to the claim on the invariability of the adverb is to say that an adverb may allow derivational variation, but that one cannot inflect or conjugate an adverb.

There are still two problems to the above refinement. First, from ancient times up to at least Hjelmslev (1935), grammarians have proposed that what is usually called an adverb is not really a separate word at all, but rather a case form, to wit, an 'adverbial case' of another word. Thus *carefully* would be analyzed as the adverbial case form of the adjective *careful*, or Latin *articulatim* 'piecemeal' would be the adverbial case of the noun *articulus* 'member.' The majority view, however, is to condemn the 'inflectional' theory of adverbs as being highly ad

hoc, at least for Standard Average European. It is true that many adverbs are morphologically related to words of other categories, but many are not thus related (e.g., English *soon* or Latin *clam* 'secretly'); second, for the adverbs that have this relation, it may not be the result of any productive adverb formation process (e.g., *only*, *yesterday*, *perhaps*); and third, for the adverbs that are the result of a productive adverbialization process (e.g., *Eurocratically*, *COMECON-style*), this process is best taken to be derivational rather than inflectional (see Pinkster 1972: 63–70).

The second problem is that, even though invariability may be a necessary feature of the adverb, it may not be sufficient. The English adjective *careful* is no less invariable than the adverb *carefully*. In an isolating or highly isolating language such as Chinese, all or virtually all words are invariable. And even in highly flexional languages, finally, such as Latin or German, prepositions, conjunctions, and interjections are typically invariable too.

### 1.3 An Adverb Modifies a Verb

In the case of *John had carefully opened the door*, the idea that an adverb modifies a verb has some plausibility, and *carefully* does seem to specify the manner of the event of opening that John was involved in. However, precisely because it is not just any event of opening that was careful, but rather the specific one of opening the door, one may feel that what is in the scope of the adverb is not merely the verb *opened* but the entire verb phrase *opened the door*. And why not then consider the whole clause to be in the scope of the adverb, for *carefully* does also name a property of the subject *John*? Witness the paraphrase *John was careful in opening the door*. Admittedly, the latter paraphrase is not always possible. When John sang his aria beautifully, John was not beautiful, but it remains the case that what was beautiful was not merely a singing but John's singing of his aria. To conclude, even with simple manner adverbs there are reasons to think that the adverb does not merely modify a verb, but rather a verb phrase or an entire clause.

In *He will meet me here*, *He will certainly meet me*, and *Briefly, he will meet me*, the adverbs again modify an entire clause rather than merely its verb, but these examples also indicate that it is not sufficient to identify the scope of an adverb in syntactic terms ('clause' versus 'verb'), but that one needs semantics as well. *here* in *He will meet me here* says something about *He will meet me*. More particularly it specifies the location of the state of affairs of his meeting me. Note that one can paraphrase the sentence with *The event of his meeting me will take place here*. The scope of *certainly* is again the entire clause, but different from the place adverb *here* the modal adverb *certainly* does not so much modify any second-order entity like a state of affairs or an event, but rather the third-

order entity of a belief about the state of affairs or event. It is the speaker's propositional attitude of belief that someone will meet him that has a degree of certainty, not the event itself. *briefly* once again concerns an entire clause, but this time it is the illocutionary act associated with it. What is brief is neither the meeting nor the speaker's belief, but the speaker's assertion. One could say that *briefly*, *certainly*, and *here* have the same syntactic scope, viz. a clause, but a different semantic scope (speech act versus propositional attitude versus state of affairs) (see Dik, et al. 1990).

Variation exists both with respect to semantic and syntactic scope. In *The meeting here was never a success*, *here* has the same type of semantic scope as in *he will meet me here*, but they differ in syntactic scope. In *he will meet me here* the adverb combines with a clause, yet in *the meeting here* it combines with a noun phrase. *even* in *Even John was there* also combines with a noun phrase. So it has the same type of syntactic scope as *here* in *the meeting here*, but it has a different type of semantic scope: *even* modifies an ordinary first-order entity. Different still are *very* in *I saw him very briefly* and in *the meeting was very brief*. In the former, *very* has another adverb in its syntactic scope and, in the latter, an adjective. In *The nail went right through the wall*, finally, *right* seems to combine with a prepositional phrase.

The general conclusion is that the suggestion carried by the terminology that an adverb modifies the verb, that it is the 'adjective' of the verb, is not correct. Perhaps it should not be ruled out that an adverb exclusively modifies a verb. This analysis is plausible for the function of *over* in the phrasal verb *hand over* as in *Poirot handed over the evidence*—witness also that Dutch cognates to phrasal verbs are often one-word lexemes (e.g., *overhandigen*). But in the case of English these adverbs are at best not representative for the entire class and at worst they are not even adverbs any more, but as the English linguistic tradition suggests, particles. A similar category change can be witnessed when a time adverb becomes a tense marker on the verb, as with the Bari (Sudanese) clause-initial adverb *dé* 'then, afterwards' which came to function as a preverbal future marker (see Heine and Reh 1984: 120–21).

### 1.4 An Adverb is Optional

If one deletes the adverbs in *John had carefully opened the door* or in *Very briefly, he will certainly meet me here* the resulting sentences remain grammatical. So all of these adverbs are optional. But it does not follow that all adverbs are optional. On the one hand, in *John lived here*, the adverb *here* is obligatory: the predicate *live*, when meaning 'reside,' can be said to be subcategorized for co-occurrence with a place adverbial. Similarly, intransitive *wash* as in *My shirt washes easily* needs a manner adverbial, and presentative

## Adverbs and Adverbials

*there* in *There is a man* is obligatory too. On the other hand, a predicate such as *to be dead* cannot co-occur with a place adverbial at all (\**John was dead here*). Cases like these make it impossible to use optionality as a criterion for adverbiality. The alternative, of course, is to say that the forms discussed are not really adverbs. Thus one finds linguists claiming that *here* in *John lived here* is a locative ‘object’ or ‘argument’ rather than an adverb or that presentative *there* should be divorced from its adverbial origin and merely called a dummy subject.

### 1.5 Position

A language may reserve a certain position for adverbials. The English ‘middle field’—the area between the finite and the nonfinite verb—is such a position. Thus *John had carefully opened the door* is grammatical, and *John had the door opened—with had* as a past tense auxiliary and not as a causative—is not. Of course, the adverb *carefully* need not go into the middle field (*John had opened the door carefully*) and one may remark that in general the position of adverbs is rather flexible. Yet it remains true that the English middle field only hosts adverbials. The possibility of occurring in the middle field can thus be taken to be a sufficient condition for adverbiality. It is not, however, a necessary condition. *Upstairs* and *too* are both adverbs, yet they cannot occur in the middle field (\**John had upstairs/too opened the door*).

### 1.6 ‘Adverb’: A Remarkable Consensus

None of the properties mentioned above is both a necessary and a sufficient condition for membership of the category and the adverb. But at least some of the conditions discussed may well make sense in terms of prototypicality (see Ramat and Ricca 1994). Depending on the language, the typical adverb may well be invariable (except for the derivational expression of gradability), modify most other categories, be optional, and obey certain word order restrictions. In any case, there is a large cross-theoretical consensus about when some word is an adverb. This consensus is not absolute, though. Most importantly, there is a strong German tradition, exemplified in linguists such as Weydt (1989), König (1990), and Abraham (1990), and influential in continental linguistics as a whole, that advocates a peculiar division of labor between the terms ‘adverb’ and ‘particle,’ such that, e.g., neither *even* in *Even John was there* nor *just* in *He just won’t listen* are adverbs, but rather particles. One may also point to recurrent claims, inspired by Jespersen (1924), to the effect that *before* as in *I saw him before* is a preposition rather than an adverb. What is behind the latter claims is the hypothesis that prepositions can be transitive as well as intransitive. In *I saw him before dinner* the preposition would be transitive and what is an adverb in the majority view would then be an intransitive preposition.

### 1.7 Universality

Little is known about the universality of the adverb and of its uses (see Hengeveld 1992: 47–72 and, for Europe, van der Auwera 1998). It is clear, however, that there is a lot of cross-linguistic variation in the work load of the adverb. In English, a construction such as *The soup tastes terrible* has no need for an adverb; *terrible* is an unmistakable adjective, and it cannot be replaced by an adverb (\**The soup tastes terribly*). Polish, however, needs an adverb here—*Zupa smakuje okropnie!/\*okropna*. A similar contrast is found in *It is obvious/\*obviously that I have heard about it* and its literal Polish translation *Oczywiście/\*oczywisty, że o tym słyszałem*. In the Uto-Aztecan language Ute *sweetly* as in *She is talking sweetly* is expressed as an adjective stem incorporated in the verb (Givón 1984: 80), and in the Papuan language Hua the adverb *quickly* in *He went down quickly* is expressed as a verb meaning ‘to be quick,’ which functions as a so-called ‘same subject medial verb’ combined with a ‘final verb’ expressing the going down (Haiman 1980: 283). For the latter language it is unclear whether the category makes any sense at all. That adverbs are not ‘imperatively required for the life of language’ was already claimed by Sapir (1921: 126) and illustrated with the Californian language Yana: would-be adverbs are in this language claimed to be either nouns or affixes in the verb.

## 2. Adverbial Phrases and Clauses

Adverbials that are not adverbs are either adverbial phrases or clauses. In *I saw him very briefly*, *very briefly* is an adverbial phrase with an adverbial head. There are also adverbial noun phrases, such as *the whole day* in *I talked to him the whole day*, ordinary prepositional phrases, such as *in the city* in *I met him in the city*, and discontinuous prepositional phrases, such as *which city . . . in* in *Which city did you meet him in?* Phenomena intermediate between adverb and adverbial are the ‘pronominal adverb’ and the ‘prepositional pronoun.’ Just as ordinary pronouns are standardly taken to be words that function like noun phrases, so pronominal adverbs and prepositional pronouns are words that function like prepositional phrases. In Germanic linguistics the term ‘pronominal adverb’ refers to a complex lexeme consisting of a locative adverb followed by a postposition, e.g., English *wherewith* or *hereby*—in French linguistics the term is also used for certain uses of the adverbs *en* and *y* (e.g., *J’y répondrai* ‘I there (=to it) will respond’). If one paraphrases a Germanic pronominal adverb with a phrase, the postposition becomes a preposition and the locative adverb often changes into a demonstrative pronoun. Thus *wherewith* becomes *with that*, and *hereby* becomes *by (means of) this*. A case without adverb-pronoun switch is Dutch *daarlangs* ‘there-along,’ which is normally paraphrased as *langs daar* ‘along there’—there

is also a discontinuous form *daar ... langs*. In a prepositional pronoun, such as Irish *aige* 'at-him' or French *auquel* 'to-the-which,' the preposition and the pronoun have united into one word.

The adverbial clause is a subtype of the subordinate clause. It may contain a finite verb and then the type of adverbial relation is often expressed by a subordinating word or phrase (e.g., *He was happy because/in that he could leave his car at home*). Especially for the expression of time, place, and manner, the subordinating phrase may have the shape of a noun phrase and then the adverbial clause may more profitably be analyzed as a relative clause. Thus English allows *the moment we arrived* next to *when we arrived*, and some languages (e.g., Mandarin) may only allow the relative strategy (see Thompson and Longacre 1985: 178–85).

Nonfinite adverbial clauses contain either an infinitive (*He took the car in order to avoid the train strike*), a participle (*Knowing about the train strike, he took the car*), a special adverbial form of the verb, sometimes called 'adverbial participle' or 'converb' (see Haspelmath and König 1995), or a nonverbal predicate such as an adjective or a prepositional phrase (*Their father dead/in the hospital, the children left*). The exact semantic relation between the main clause and the adverbial one is often unexpressed and left to be inferred from the context. *Their father dead*, for example, could be merely temporal but also causal.

Some adverbials are intermediate between a phrase and a clause. An adverbial gerund—'gerund' taken in the Anglicist's tradition of nominalization—as in *He succeeded with his continuously asking the right question* has both phrasal and clausal characteristics. The gerundial construction is clausal because its verb combines with adverbs and objects in the manner of a verb, but it is phrasal in that it accepts the subject of the verb in a possessive form and because the whole thing combines with a preposition in the way of a noun phrase. A similar structural intermediateness is found in participial and nonverbal constructions as in *With John driving, we won't have any fun* and *With their father dead/in the hospital, the children left*.

Much as there is no universality in the uses of adverbs (see Sect. 1.7 above), so there is none with respect to the uses of adverbial phrases and clauses either. For example, English can express purpose with both a finite and an infinitival subordinate clause (*John came in order to take the knife/so that he could take the knife*), but in Nupe (Kwa) the purposive verb is expressed as a nonsubordinate second verb of a so-called 'serial verb' construction (*Musa bé lá èbi* 'Musa came took knife') (see Thompson and Longacre 1985: 175).

### 3. Adverbial Notions

The various notions that are typically expressed by adverbs and adverbials, time, place, manner, condition, cause, etc., may be classified in various ways. Thus time, place, and manner have been considered

(see Thompson and Longacre 1985: 177) more elementary than the other dimensions, for only time, place, and manner can typically be expressed by monomorphemic, nonanaphoric adverbs (e.g., *here, now, and fast*). Adverbials may also be classified in terms of their syntactic and semantic scope (see Sect. 1.3 above). Propositional attitudes, for example, can be modified by adverbials that further specify the attitude (e.g., *He will hopefully return*), its source (e.g., *According to John, Mary has already left*) or the evidence (e.g., *Given her absence at the office, she must be sick*), but not by any place, time, purpose, or instrument adverbial. Adverbial notions are also connected through general semantic relations such as hyponymy, converseness, and blending. Thus point of time, duration, and frequency are hyponyms of temporal setting, purpose is easily thought of as a special case of causation, and some conditions are also anterior circumstances (e.g., *When you turn on the radio, you will hear music*). Concession as in *John left although Mary was there too* seems a kind of converse of causation as in *John left because Mary was there too*, and a *before* clause seems a converse of an *after* clause. Concessive condition, finally, as expressed by an *even if* clause is a blend of conditionality (*if*) and concessivity (*even*). The above examples also illustrate that semantic relations may or may not be lexically transparent. Thus while the lexemes *although* and *because* do not betray any converse relation, the lexical make-up of *even if* is an indication of the blending, and the fact that *when* is ambiguous between a purely temporal and a conditional reading is indicative of a relation between time and condition.

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## Agreement

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## Agreement

G. G. Corbett

'Agreement' is widespread, being found in three-quarters of the world's languages, according to Mallinson and Blake (1981: 184). There are many instances which almost any linguist would accept as examples of agreement, yet there is no generally accepted definition. A useful starting point is provided by Steele (1978: 610):

The term *agreement* commonly refers to some systematic covariance between a semantic or formal property of one element and a formal property of another. For example, adjectives may take some formal indication of the number and gender of the noun they modify.

The essential point is the covariance or matching of features between two separate elements, such as noun and adjective. Other attempts at a definition can be found in Keenan (1978: 167), Lehmann (1982: 203), and Lapointe (1988). Most writers treat 'concord' as synonymous with agreement; there is no distinction which is consistently drawn between the two terms.

There is a question as to whether the determination of the form of anaphoric pronouns (as in examples like *the girl ... she*) is a part of agreement. The definition above covers such cases, and indeed most mainstream work on agreement uses the term in the wider sense to include pronouns. Barlow (1992: 134–52) reviews the research and concludes that there are no good grounds for distinguishing between agreement and antecedent-anaphora relations.

Traditional grammar recognized agreement as an interesting problem; it seemed relatively easy to state the general rules for agreement in languages like Latin, but several types of exception were identified. In modern linguistics, agreement was treated for some years primarily as a mere diagnostic for investigating superficially more interesting problems. However, Morgan (1972) showed that it is exceptionally difficult just to state the rules for verb agreement in English. Interest in the phenomenon has been increasing steadily, to the extent that there have been meetings devoted to the topic (see Alvarez, et al. 1984; Barlow and Ferguson 1988; Brentari, et al. 1988). The

literature on the subject is extensive, and there is considerable research in progress, in different theoretical frameworks (see Corbett, in press). Given the scope of the problem, this article will concentrate on the major topics.

Some of these topics arise even in the simplest statements about agreement. Statements of the type: 'X agrees with Y in Z,' are common, for example, 'predicate verbs agree with subject noun phrases in number.' The Y element, which determines the agreement, the subject noun phrase in this case, is called the 'controller.' The X element, whose form is determined by agreement, is the 'target.' 'X agrees with Y' specifies the 'domain' of agreement. And when the properties involved are indicated (agreement in Z, number in this instance), one is referring to agreement 'categories' (or agreement 'features'). Each of these topics will be examined; then the nature of agreement, its function, and the way in which it arises will be reviewed.

### 1. Categories

It makes sense to start with agreement categories, since they are essential to the subsequent discussion, and to look first at the possibilities, then at the problems.

#### 1.1 Category Possibilities

Agreement in gender is common; adjectives may agree with their head noun in gender, as in these Russian examples (1–3):

- |                    |                      |     |
|--------------------|----------------------|-----|
| bol'sh- <i>oj</i>  | avtomobil'           | (1) |
| large              | car (a large car)    |     |
| bol'sh- <i>aja</i> | mašina               | (2) |
| large              | car (a large car)    |     |
| bol'sh- <i>oe</i>  | taksi                | (3) |
| large              | taxi (a large taxi). |     |

The adjective changes its form according to the noun: in (1) it takes *-oj* because the noun *avtomobil'* 'car' is of masculine gender (a similar gender agreement form would occur with nouns denoting males);

in (2) it takes *-aja* because the alternative word for 'car'—*mašina*—is feminine; and (3) shows the neuter ending. While such three-gender patterns are quite common, as are two-gender systems, languages with four and five genders are not unusual, and much larger numbers are occasionally found. Gender systems may have sex as a component, as in languages with masculine and feminine genders; but equally sex may be irrelevant; the distinction may be between animate and inanimate, for example.

The Russian examples also show agreement in number; all the adjectives are singular, to agree with the singular nouns. If the first noun is changed to a plural, the form of the adjective must change to match (4):

- |                   |            |     |
|-------------------|------------|-----|
| bol'sh- <i>ie</i> | avtomobili | (4) |
| large             | cars       |     |

The contrast here is just between singular and plural. Many languages have a third member of the number system, the dual, used for denoting two items. More complex systems may also be found, for example, with special forms for three items (the *trial*), or for a small but unspecified number of items (the *paucal*).

These same Russian examples also illustrate agreement in case: all the examples above are in the nominative case, as would be appropriate for subject position. If one is included in a prepositional phrase, the form changes again (5):

- |                     |            |                  |
|---------------------|------------|------------------|
| v bol'sh- <i>om</i> | avtomobile | (5)              |
| in large            | car        | (in a large car) |

The preposition *v* 'in' governs the locative case, and the adjective, like the noun, stands in this case. Russian has six cases and there are many Indo-European languages with similar systems. Much larger case inventories can be found, in some of the languages of the Caucasus, for example.

The other commonly occurring agreement category is person. Systems with three persons, like Russian *ja čitaju* 'I read,' *ty čitaesh'* 'you read,' and *on čitaet* 'he reads,' are familiar. Larger inventories occur in languages which sub-divide one or more of these three persons in some way. For example, some languages (such as Quechua), subdivide the first person plural into the first person inclusive and exclusive; and the third person may be divided into obviative and non-obviative, as in Algonquian languages.

The final category for consideration is that of 'definiteness.' This is not often included in the agreement categories, but there is a case for its inclusion, as evidence particularly from Afro-Asiatic languages suggests. These examples are from Syrian Arabic (Ferguson and Barlow 1988: 6) (6–7):

- |         |       |             |
|---------|-------|-------------|
| rižžaal | kbiir | (6)         |
| man     | big   | (a big man) |

- |           |         |               |
|-----------|---------|---------------|
| r-rižžaal | l-kbiir | (7)           |
| the-man   | the-big | (the big man) |

For further exemplification of these categories see Moravcsik (1978: 336–62), and the entries on *Gender and Gender Systems*; *Number and Number Systems*; *Case*.)

## 1.2 Category Problems

While it is true to say that, for example, Russian adjectives agree with their noun in gender, such statements generally need qualification. This is because there are frequently restrictions on agreement. Thus German adjectives also show agreement in gender. But this agreement is restricted syntactically: within the noun phrase there is agreement, but when an adjective functions as a predicate (with the copula), then there is no agreement. There are often morphological restrictions too. The Russian examples (1–3), show agreement in gender; however, if the same phrases are made plural, the adjective in each case takes the same form as in (4); that is, agreement in gender is restricted to the singular number. And the restriction may be lexical: in the northeast Caucasian language Khinalug, most verbs show agreement but some do not.

The second type of qualification to the general statements of agreement possibilities is that the categories are different in nature. In the case of gender, it is an inherent feature of the noun. Gender is found on the target, say the adjective, as a consequence, in some sense, of its presence in the noun. In example (1), the masculine ending on *bol'shoj* has nothing to do with the lexical meaning of the adjective, but results from the fact that the adjective is modifying a masculine noun. A somewhat similar situation obtains for person; in the Russian sentences *ja čitaju* 'I read,' 'first person' is an inherent feature of the pronoun, but not of the verb. In number, things are a little different, and more debatable. Number is an inherent property of some nouns: nouns which are only singular (like English *prestige*), or only plural (like *scissors*), impose this feature on their modifiers. Typically, however, a considerable proportion of the nouns of a given language can be associated with both (or all) numbers. In straightforward examples involving such nouns, like (4), the number feature appears to relate primarily to the noun; the property denoted by the adjective (largeness in this instance), is not affected by the change in number, which is again just a result of the fact that it modifies a noun which has this feature.

With case, the picture is different again; clearly not an inherent feature, case is imposed by government by some other syntactic element (the preposition in example (5)). Thus the noun and adjective in (5) are in the same case because it is imposed on both. They do indeed covary for case, but this covariance differs from that found with, say, gender; as a result some would not recognize case as an agreement category. Speaking metaphorically, it can be said that nouns start out having gender and impose it on their modifiers (similarly pronouns have person which they



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impose on their agreement targets); nouns typically gain number, which they impose on their modifiers. However, nouns gain case 'at the same time' as their modifiers and so come to have the same case. While this holds for the straightforward instances of matching of case within the noun phrase, there are more complex instances of covariance in case between predicate complements and their controllers (for which see Timberlake 1988 on Lithuanian, and references there to earlier work, especially by Andrews). Finally, agreement in definiteness is an instance of a feature imposed on the noun phrase as a whole, which may be indicated at more than one point in the phrase; this gives rise to a matching of the definiteness feature. Previewing the later discussion, it might be said whether such instances count as agreement or not depends in part on whether it is considered *directional*. If 'X agrees with Y' implies that Y has the feature 'first' and then this is matched by X, then there is a strong case for saying that (5) does not in fact show agreement in case, nor (7) agreement in definiteness; if simple matching is all that is required, then they are instances of agreement.

The third type of problem with general statements of agreement possibilities is that there are instances where the features expressed by the morphology do not in fact match. A familiar one is found in English. The statement that predicate verbs agree with the subject noun phrase is contradicted, particularly in British English, by examples like the following (8):

The committee have decided. (8)

The subject stands in the singular, yet the verb is plural (see Sect. 5.2).

### 2. Controllers

Typical controllers present little difficulty of identification, yet there are numerous problems with the less straightforward cases.

#### 2.1 Controller Possibilities

The discussion of categories suggests that the features involved in agreement are associated originally or primarily with nouns; traditionally nouns and pronouns are considered the normal agreement controllers. However, in subject-verb agreement, and indeed any agreement extending beyond the noun phrase, it appears that it is the noun phrase rather than the noun which is the controller. (A clear instance is agreement with conjoined noun phrases.) This poses little difficulty in that many would claim that the noun phrase's features depend on those of the head noun and so the noun is still in a sense the controller. On the other hand there is an asymmetry here, and there are examples where agreement even within the noun phrase cannot easily be explained as agreement with the noun; for these reasons, some, like Lehmann (1982: 221–24), claim that agreement is always controlled by

a noun phrase. Either way, it is established that possible controllers are 'virtually always constituents in the N projection' (Pullum 1984: 82).

#### 2.2 Controller Problems

The analysis of agreement controllers presents several problems. First, there are cases where different elements within the controller compete to control agreement. Thus if the subject consists of conjoined noun phrases, the verb may well agree with just one of them. In quantified expressions there is often competition between the quantifier and the quantified noun for the role of controller. Then there are instances where different potential controllers are in competition; for example, the predicate complement may compete with the subject noun phrase in determining the agreement form of the copula verb; this phenomenon is known as 'attraction' or 'back agreement.' (For examples of all these see Corbett 1988: 25–32; and for a case of complex interaction of competing factors in determining the controller see Tsunoda 1981 on Djaru, and compare Mallinson and Blake 1981: 88–89, and Comrie 1989: 191–92.)

Another common problem, and a serious one in some theoretical frameworks, is the existence of so-called 'prodrop' languages. It may be desirable to say of certain languages, for example, Serbo-Croatian, that verbs agree with their subject in person and number, as in *ja čitam* 'I read,' *ty čitaš* 'you read.' In most circumstances, the more natural utterances would be *čitam* and *čitaš*. The problem is that the pronominal agreement controller is normally not present. For other problematic controllers see the remarkable data on Chamorro and Palauan presented by Chung and Georgopoulos (1988), and the Upper Sorbian data discussed by Corbett (1987).

### 3. Targets

Targets vary widely, and involve considerable problems of analysis.

#### 3.1 Target Possibilities

Examples of agreement of adjectives within the noun phrase have already been noted. Demonstratives may also be found agreeing similarly, as may articles (definite and indefinite), various possessives, and numerals. The latter type of target is perhaps less familiar and so will be illustrated with examples from the Bantu language Chichewa;

chi-pewa chi-modzi (9)  
hat one (one hat)

zi-pewa zi-wiri (10)  
hats two (two hats)

Here the numeral agrees in gender and number with the noun.

In many languages predicate verbs agree with the subject noun phrase. They may also agree with the

direct object (as in various Bantu languages), and with various other arguments. Personal pronouns agree with their antecedents (though some would exclude them from agreement, as discussed earlier), as do relative pronouns. Surprisingly, perhaps, the list continues. Adverbs can show agreement (in Lak and in Kala Lagaw Ya, for example), as can adpositions (Abkhaz), and there is even evidence (from West Flemish) that complementizers can agree. The possessed noun may show agreement with the possessor (again found in Abkhaz), and, more rarely, the possessor may agree with the possessed (as in Chamalal). For illustrations of all of these target types see Corbett (1991: 106–15); see also Lehmann (1982: 207–15) for useful data.

### 3.2 Target Problems

A problem which targets cause for accounts of agreement is that the realization of agreement may differ according to the target. In its simplest form, this difference is widespread in Indo-European; consider this example from Serbo-Croatian (11):

- Milica je došla (11)  
Milica is come (Milica came)

The auxiliary verb shows agreement in person and number (it is third person singular), while the participle shows agreement in number and gender (feminine singular). These targets, then, show agreement in different features, but in the feature they share, namely number, they show the same value (singular). This identity of the shared feature is not always found, however, as this Slovak example shows (12):

- Mama, vy ste taká dobrá! (12)  
Mother, you are so kind!

Here, there is agreement with the plural pronoun *vy* 'you,' used honorifically; both parts of the predicate agree in number, but *ste* is plural, while *taká dobrá* is singular (and feminine). And when controllers allow agreement options (as, say, English nouns like *committee*, which allow singular and plural agreement), the particular target involved may have a major influence on the form chosen. (For detailed analysis of such problems see Corbett 1983.)

### 4. Domains

As noted earlier, when both the controller and the target can be identified the agreement domain is specified. Given the range of possible targets, it is evident that the number of possible domains is also large, both when looking at the possible domains in human language, and even when considering certain individual languages (see Moravcsik 1978: 362–66 for discussion). Ideally it should be feasible to derive the possible agreement domains from some more general principle. The most influential attempt to do this is that of Keenan (1978). In a nutshell, Keenan claims

that X may agree with Y if, and only if, in the logical form of a given syntactic structure, the logical forms of expressions of X are interpreted as functions taking the interpretations of expression of Y as arguments: in other words, targets are functions and controllers are arguments. This account covers a large proportion of the attested domains: controllers, as demonstrated, are typically nominal, while targets, at least the common ones, may be viewed as functions or operators semantically (compare Pullum 1984: 82). Keenan's generalization is the basis for the *control agreement principle* of Generalized Phrase Structure Grammar (Gazdar, et al, 1985: 83–94), and of similar constructs in other theories. The important point here is that the *control agreement principle* specifies possible agreement domains by reference to the semantic types of the elements involved.

Before leaving domains it is necessary to consider some of the complexity involved. First, note that agreement may be 'downwards,' in the sense that dependents can agree with their heads, and as Nichols (1985) shows, it may be 'upwards,' since heads can agree with dependents. And then it should be said that there are instances of domains which seem to stretch the range beyond anything which might have been predicted. Consider the following data from the northeast Caucasian language Archi (Kibrik 1972: 124) (13–16):

- w-ez dija k'anši w-i (13)  
I father like is (I like father)  
d-ez buwa k'anši d-i (14)  
I mother like is (I like mother)  
b-ez dogi k'anši b-i (15)  
I donkey like is (I like the donkey)  
Ø-ez motol k'anši Ø-i (16)  
I young goat like is (I like the kid)

Archi is an ergative language: the part of the verb which shows agreement agrees with the object of a transitive verb; there are four different forms in (13–16), corresponding to the four genders of Archi. With verbs of emotion and perception, the subject stands in the dative case; in the examples (13–16) it is a personal pronoun with an agreement slot, and this also agrees with the object. Thus one argument of the verb agrees, through it, with another. (Another remarkable agreement domain is described in Troike 1981.)

### 5. The Nature of Agreement

There are two problems which have dominated attempts to give a satisfying account of agreement: the question of directionality and the nature of the link between controller and target.

#### 5.1 Directionality

As illustrated in the discussion of categories (Sect. 1), there is a clear intuition that agreement is in a

## Agreement

sense directional. Consider this Russian example (17):

Irina čitala  
Irina was reading. (17)

The noun *Irina* is feminine because it denotes a female. The verb shows feminine agreement (-a) because its subject is feminine—the reading is not feminine. A noun typically has only one gender, while the verb has alternative forms to match the features of a particular subject in a given sentence.

Early accounts of agreement, in Transformational Grammar, captured this intuition by copying features from the controller to the target. This works in many cases, but there are problems, several of which have already been encountered above. The controller may be absent (as in the pro-drop cases). This was handled by having the controller present, copying its features, and then deleting it (an approach not available in more recent theories). However, the controller may be present but be underspecified, as in this French example (Ferguson and Barlow 1988: 12) (18):

je suis heureux / je suis heureuse. (18)  
I am happy / I am happy.

The first variant would be used by a male speaker, and has masculine agreement, while the second is appropriate for a female as it shows feminine agreement. A copying account of agreement requires two forms of the first person pronoun, even though there is no formal difference. Finally, copying analyses have problems with instances where the features on the controller and the target do not match (as with nouns like *committee*).

More recent approaches, notably that of Generalized Phrase Structure Grammar, allow free instantiation of feature on controllers and targets. Only those structures meeting certain constraints, typically, the identity of certain features, are grammatical. Thus matching of features occurs but without copying. The work is done by ‘unification,’ which has a vital role in several different frameworks. In such accounts there need not be any directionality of agreement—yet it represents an important intuition. In Generalized Phrase Structure Grammar this notion is reintroduced by the *control agreement principle* (see Sect. 4), which specifies possible controllers and targets, and gives them different statuses. Since, however, there is no movement of features in such a model, it is more accurate to talk of the asymmetry of agreement rather than directionality.

Unification does not require that feature sets should be fully specified; it will allow analyses of the examples with absent and underspecified controllers. If, as in the second variant of (18) above, the controller is first person and singular but is unspecified for gender, while the target is singular and feminine but is unspecified for person, unification of the two

will give the values: first person, singular, feminine. Thus agreement can be seen as a matter of cumulating partial information from controller and target (see Barlow 1992; Pollard and Sag 1994). It is still asymmetric in that the information relates primarily to the controller. (Note that this view would exclude from agreement most instances of case and definiteness matching.)

### 5.2 The Link between Controller and Target

The traditional view of agreement was that the link was a matter of syntax. To those who had worked on Latin, it seemed obvious that most cases of agreement could be covered by relatively straightforward syntactic rules. They were careful to note exceptions, where the features of the controller and target do not match (analogous to the English *committee* problem), and suggested that these show interference from semantic factors. This is still the dominant view. Those who appeal to the *control agreement principle* or some similar principle are claiming that the domains of agreement can be specified by appeal to semantics but the domains themselves remain a matter of syntax.

Others, however, follow a different line. Barlow 1992: 230), for example, cites examples like the following (19–21):

Five dollars is too much. (19)

John and only John is allowed in here. (20)

This team are going to win the cup. (21)

In such cases it appears that agreement is semantically motivated (taking semantics broadly). There is a plural subject in (19), yet a singular verb. The conjoined noun phrases in (20) have a single referent and so there is a singular verb. Example (21) is the opposite of (19); there is a singular subject and plural verb.

If an appeal has to be made to semantic factors in such instances, a logical move is to try to treat the whole of agreement as a matter of semantics (as suggested by Dowty and Jacobson 1988, for example). To take a straightforward example:

The cat sits on the mat. (22)

It can be argued that *sits* is singular because its controller *cat* denotes a singular entity. This is in the nature of the agreement categories of gender, number, and person: they all display a greater or lesser degree of overlap with the real world and therefore many instances of their use can be equally well treated as syntactic or semantic. It is significant that those who favor the semantic approach typically start from English data; English allows greater scope for semantics/pragmatics than almost any other language whose agreement system has been analyzed in any depth.

Just as there are cases where the syntactic view of agreement has to appeal to semantic factors, so it

would seem that a semantic view will need to appeal to syntactic factors. An obvious case involves languages with grammatical gender, where the gender, say of inanimates, is not determined by their meaning (see *Gender and Gender Systems*). It is hard to construct a convincing semantic account of the feminine agreements with *mašina* 'car' in (2), as opposed to the use of the masculine with *avtomobil* 'car' in (1). Another difficulty is examples like the following (H. Clarke cited in Barlow 1988: 227):

I am parked on the hill. (23)

While the intended referent is clearly a car, there is no possibility of a third person verb—syntactic person agreement is required. Perhaps the most serious problem for the semantic approach to agreement, as indeed for the syntactic approach, is sentences like (21) above, where both 'syntactic' agreement of the determiner *this* and 'semantic' agreement of the verb *are* are found. Here it appears that semantic accounts have to leave a place for syntax.

The evidence suggests that both syntax and semantics are involved in agreement. Their relative importance varies from language to language. The conflict between the two can give rise to considerable variation—constructions where alternative agreement forms are found. However, this variation is tightly constrained, for example, by the *agreement hierarchy* and associated constraints (Corbett 1983; 1987: 319–22).

## 6. The Functions of Agreement

Given its pervasiveness and complexity, it is reasonable to ask what agreement does. The old answer is that it introduces redundancy, so that if part of the message is lost, owing to noise in the communication channel, there is a greater chance that the original message can be reconstituted. This may well be part of the answer. More recently, researchers have pointed to a more specific function of agreement, namely its role in allowing the speaker to keep track of referents in a discourse, by means of the agreement categories. This is easy to see in English, if the control of the pronouns (*he/she/it/they*) is part of agreement. In languages with fuller agreement systems, other types of agreement may carry a comparable load (see Lehmann 1982: 233; 1988; Foley and Van Valin (1984: 327). This view is consistent with that of Barlow (1988: 3, 7), according to whom the controller and target 'instigate discourse referents'; he proposes a discourse-linking theory, in which agreement relates to utterances in discourse. Pollard and Sag (1994: 242), also see the role of agreement as being to keep track of referents in discourse. The old and new suggestions as to the role of agreement may be seen as complementary. And, as with word order, for example, its functions and importance may vary considerably from language to language.

## 7. The Origin of Agreement

The major work on the rise of agreement is Givón (1976). He claims that subject-verb agreement develops from pronouns in topic-shifting constructions. This is shown schematically as follows; in (24) there is a shifted topic:

the man,	he	came	(24)
TOPIC	PRONOMINAL SUBJECT	VERB.	

Here the pronoun represents topic agreement. This marked construction may become reanalyzed as a neutral sentence type, as has occurred in many non-standard dialects of American English (25):

the man	he-came	(25)
SUBJECT	AGREEMENT MARKER-VERB.	

This reanalysis results from the overuse of a powerful discourse device, which is a reasonable strategy, particularly if conditions for communication are difficult. Givón claims that evidence for pronouns becoming subject agreement markers can be found in English and French dialects and in related pidgins and creoles. Various Bantu languages also provide confirming data, as is illustrated from Swahili (26):

kikopo	ki-li-vunjika	(26)
up	AGREEMENT MARKER-PAST-BREAK	(the cup broke)

The subject agreement markers retain their older anaphoric function (27):

ki-li-vunjika	(27)
it-PAST-break	(It, the cup, broke)

Thus the marker *ki* (which shows gender and number), allows the hearer to establish the intended referent in context in (27); it also occurs as an agreement marker when there is explicit reference to the referent as in (26). As is implicit in the account above, Givón claims that agreement and pronominalization are 'fundamentally one and the same phenomenon.' While pronouns are no longer believed to be the only source of agreement systems, they are certainly a primary one. And the fact that pronouns, which are particularly susceptible to semantic/pragmatic factors, become increasingly grammaticalized to form agreement morphology contributes to the understanding of why synchronic accounts of agreement require reference both to syntax and to semantics.

## 8. Conclusion

Agreement remains something of an enigma. It is widespread, yet its functions are still poorly understood. Despite a great deal of research from the mid-1970s onwards, in a variety of theoretical frameworks, a reasonable account of the phenomenon has yet to be formulated.

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## Anaphora

P. Sells and T. Wasow

The term 'anaphora,' as it has come to be used in modern grammatical theory, encompasses the phenomena of pronominal reference and various kinds of ellipsis. What these have in common is that an element or construction is dependent for its inter-

pretation on being associated with something else in the context. Developing an understanding of these phenomena has become an area of intense activity among linguists, although many major questions remain unsolved.

A few examples of different types of anaphora are given in (1). The underlined portions of these examples are anaphoric elements; the italicized expressions are referred to as their 'antecedents.'

- (a) *The children* love their parents. (1)
- (b) *The children* love themselves.
- (c) *The children* love each other.
- (d) The young *children* love the older ones.
- (e) This dress has three *large holes* and that shirt has two \_\_\_\_.
- (f) Children will *break the law* if adults do it.
- (g) Children will *break the law* if adults do \_\_\_\_.
- (h) Some people who *break the law* do so repeatedly.

There are a variety of issues relating to anaphora that have been extensively investigated. They can be divided roughly into three categories: syntactic, semantic, and pragmatic. The central syntactic problem in anaphora is determining what will serve as an antecedent for each type of anaphoric element. Subsumed under this general problem are such questions as whether antecedents must be grammatical constituents and, if so, of what type; what relative positions in a sentence anaphoric elements and their antecedents may be in; and whether a given choice of antecedent is optional or obligatory. The central semantic issue is how the interpretation of an anaphoric element is related to the interpretation of its antecedent. Investigations of this issue have raised many difficult theoretical questions regarding the nature of meaning and semantic representation. The central pragmatic question is what factors determine which antecedent is chosen for a given anaphoric element, when more than one is syntactically and semantically permissible. There has been substantial work on this subject (especially in the computational linguistics literature), but it will not be reviewed here (see Grosz, et al. 1989, and references cited there).

## 1. Syntax

### 1.1 Pronominal Anaphora

By far the most widely studied anaphoric elements are third person pronouns (both reflexive and non-reflexive) with noun phrase (NP) antecedents. (Traditional grammar holds that the antecedent of a pronoun is a noun; however, it is clear that the antecedent is really a noun phrase.) The most basic observations about these elements that any analysis must capture include the following: (a) a reflexive pronoun must have an antecedent nearby; (b) the antecedent of a nonreflexive pronoun cannot be too nearby; and (c) the antecedent of a pronoun cannot be in a position that is subordinate to it. These generalizations are illustrated in (2), using the notation of 'coindexing' (i.e., assigning identical subscripts) to indicate anaphoric relations. (Thus examples (2c) and (2e) are ungrammatical (only) under the interpretation indicated.)

- (a) The children<sub>i</sub> entertained themselves<sub>i</sub>. (2)
- (b) \*The children<sub>i</sub> remember that we entertained themselves<sub>i</sub>.
- (c) \*The children<sub>i</sub> entertained them<sub>j</sub>.
- (d) The children<sub>i</sub> remember that we entertained them<sub>j</sub>.
- (e) \*They<sub>i</sub> remember that we entertained the children<sub>j</sub>.

The most influential account of these observations, known as the 'Binding Theory' (henceforth BT), was put forward by Chomsky (1981), building on much earlier work. BT consists of three principles, corresponding to the three observations made above.

Before presenting them, however, it is necessary to offer some definitions.

- (a) Node A *c-commands* node B if every branching node dominating A dominates B. (3)
- (b) A node is *bound* if it is coindexed with a c-commanding node.
- (c) A node is *free* if it is not bound.

These definitions are formulated in terms of standard phrase structure trees. It is assumed that readers are familiar with this type of representation and with terms like 'node' and 'dominate.' The intuitive notion behind the formal notion of c-command is something like being higher-in the tree or being superordinate. To test whether A c-commands B, trace up the tree from A until a branching node is encountered and then seek a path down the tree to B. Other definitions of c-command have been proposed in the literature, replacing the criterion of 'branching' with a different one.

The principles of BT can now be presented although a few key technical terms will be left undefined for the moment:

- (a) Principle A: An anaphor must be bound by an antecedent in its governing category. (4)
- (b) Principle B: A pronominal must be free in its governing category.
- (c) Principle C: An R-expression must be free.

The term anaphor here is used to cover reflexive pronouns and reciprocal expressions (e.g., *each other*; replacing *themselves* by *each other* in (2) does not alter the pattern of grammaticality). The term 'pronominal' covers nonreflexive pronouns. 'R-expressions' are noun phrases that are not pronouns (i.e., names and descriptions). The phrase 'in its governing category' in the principles corresponds to the word 'nearby' in the informal statement of the observations above. Extensive discussion has gone into giving the phrase a precise definition, and a number of candidates have been proposed, each of which has many other implications for the theory of grammar. For present purposes, we will simplify considerably and say that the governing category of an element is usually the minimal NP or S properly containing it. (There are cases in which this simplification is inadequate, including those with anaphors in the subject position of non-finite clauses, which sometimes has no governing



category, and positions internal to certain NPs, where the governing category is not the minimal dominating NP. Some such cases will be discussed below.)

Returning to the simple cases, Principle A of BT says that reflexives and reciprocals must have c-commanding antecedents in the same clause (as in (2a)) or minimal NP (as in *Mary<sub>i</sub>'s picture of herself<sub>i</sub>*). Principle B says that nonreflexive pronouns cannot have c-commanding antecedents in the same clause (2c) or minimal NP (*\*Mary<sub>i</sub>'s picture of her<sub>i</sub>*). Principle C entails that neither kind of pronoun may c-command its antecedent (2e). It also says that even those R-expressions that may take antecedents can never be c-commanded by their antecedents; this is illustrated by (5).

- (a) When John<sub>i</sub> arrived, the idiot<sub>i</sub> sat in the wrong chair. (5)  
 (b) \*John<sub>i</sub> regretted that the idiot<sub>i</sub> sat in the wrong chair.

The brevity and relative simplicity of BT is deceptive: it represents the culmination of many years of research into these topics, and it embodies a number of important insights that emerged during those years. Hence, a few comments are in order.

First, BT does not actually say which elements may be the antecedents of which others. Rather, it gives the conditions under which pronouns may or must be bound. While the data on which BT is based are intuitions of antecedence, those intuitions do not necessarily coincide with binding relations. In particular, the reference of a pronoun may be understood to be the same as that of another NP that does not c-command it, as in (6); but it is built into the definition of binding that only c-commanding NPs may bind a pronoun.

- (a) John<sub>i</sub>'s mother loves him<sub>i</sub>. (6)  
 (b) The fact that we teased the children<sub>i</sub> upset them<sub>i</sub>.

Notice, however, that nothing in BT prohibits coindexing in these cases. Indeed, BT says nothing about which NPs pronominals may be coindexed with; neither (6) nor (7) is explicitly covered by the principles.

- John<sub>i</sub> thinks everyone loves him<sub>i</sub>. (7)

BT only says that there are certain NPs which pronominals must not be coindexed with. This is because, quite generally, nonreflexive pronouns need not have antecedents in the same sentence. For that matter, they need not have linguistic antecedents at all—that is, they can refer to salient entities that are not mentioned in the discourse. Hence BT, unlike most earlier work, does not pair nonreflexive pronouns with antecedents. But it permits coindexing in just those environments where speakers find coreferential interpretations possible.

Second, BT has no asymmetry based on linear precedence. That is, it permits pronouns to be bound by elements that follow them. Initially, this may seem counterintuitive, for it is natural to think of anaphoric

elements as deriving their interpretations from something previously mentioned. But there are cases of 'backwards anaphora' (or 'cataphora,' as it is sometimes called), such as (8).

- If he<sub>i</sub> is lucky, John<sub>i</sub> will win. (8)

While there have been a number of proposals that do include linear precedence as one factor governing anaphoric binding, BT follows Reinhart in claiming that the relevant structural factors are hierarchical. To the extent that there appears to be a left-right asymmetry, it is because English is predominantly right branching, according to this view.

Third, Principles A and B are not limited to third person pronouns. Facts like the following are subsumed under the principles, even though first and second person pronouns are not really anaphoric, at least as anaphora are characterized here.

- (a) \*I<sub>i</sub> think that nobody listens to myself<sub>i</sub>. (9)  
 (b) \*You<sub>i</sub> amuse you<sub>i</sub>.

Fourth, BT says nothing about the fact that anaphoric elements and their antecedents usually must agree in person, number, and gender. A reasonable first approximation is to say that coindexed NPs must agree in these features. There are, however, cases like (10) where pronouns do not agree with their apparent antecedents, suggesting that such agreement is actually a function of the semantics.

- I bought a Veg-o-matic, after I saw them<sub>i</sub> advertised on TV. (10)

## 1.2 The Binding Theory and Empty Categories

Government and Binding theory (GB) posits several kinds of empty categories—that is, elements that are not pronounced, but play a role in the syntax and/or semantics of sentences. The application of BT to these elements plays a central role in accounting for a variety of syntactic facts within this theory (though not in others). In this section, a few of the most important uses of BT in connection with empty categories in GB will be summarized.

The trace left behind by NP movement (in constructions like the passive) is treated as an anaphor, and hence is subject to Principle A. This accounts for distinctions like the following (where *t* represents a trace):

- (a) Pat<sub>i</sub> was told *t<sub>i</sub>* that I saw Chris (11)  
 (b) \*Chris<sub>i</sub> was told Pat that I saw *t<sub>i</sub>*.  
 (c) Pat<sub>i</sub> is believed *t<sub>i</sub>* to be dangerous.  
 (d) Pat<sub>i</sub> is believed *t<sub>i</sub>* is dangerous.

This pattern parallels the distribution of overt anaphors, as Principle A predicts:

- (a) They<sub>i</sub> told each other<sub>i</sub> that I saw Chris. (12)  
 (b) \*They<sub>i</sub> told Pat that I saw each other<sub>i</sub>.  
 (c) John<sub>i</sub> believes himself<sub>i</sub> to be dangerous.  
 (d) \*John<sub>i</sub> believes himself<sub>i</sub> is dangerous.

The traces of wh-movement are treated as R-expressions, and hence subject to Principle C. This accounts for a phenomenon known as 'strong crossover,' exemplified in example (13):

- (a) Which linguist<sub>i</sub> did you say t<sub>i</sub> thought I had insulted him<sub>i</sub>? (13)  
 (b) \*Which linguist<sub>i</sub> did you say he<sub>i</sub> thought I had insulted t<sub>i</sub>?

In such sentences, the relative positions of the pronoun and the wh-phrase provide no basis for predicting whether an anaphoric relationship is possible, but the relative positions of the pronoun and the trace permit them to be differentiated. More generally, treating wh-traces as R-expressions predicts that examples involving wh-movement will behave with respect to anaphora as if the wh-phrases had not been moved. Sentences like the following, exemplifying what is known as 'weak crossover,' provide some support for this prediction: in general, the pattern of grammaticality between a pronoun and an NP that the pronoun does not c-command is preserved if the NP is moved away, leaving a trace. The use of '%' indicates that only some speakers accept the examples. The difference in acceptability in the examples in (14) raises many issues of analysis, which will not be detailed here. For most speakers, anaphora to a kind-denoting term like *bulldogs* is easier than to the quantificational *certain breeds*: nonrestrictive relative clauses typically allow the anaphora, restrictive relative clauses are harder, and interrogatives the hardest (see Wasow 1979).

- (a) Only people who own them<sub>i</sub> could love bulldogs<sub>i</sub>. (14)  
 (b) He breeds bulldogs, which<sub>i</sub> only people who own them<sub>i</sub> could love t<sub>i</sub>.  
 (c) %People who own them<sub>i</sub> love certain breeds<sub>i</sub>.  
 (d) %Which breeds<sub>i</sub> do people who own them<sub>i</sub> love t<sub>i</sub>?

A third type of empty category in GB is PRO, which appears in the subject position of most infinitives. PRO is analyzed as a pronominal anaphor—that is, as an element subject to both Principle A and Principle B of BT. This entails, paradoxically, it would seem, that PRO must be both bound and free in its governing category. The contradiction is only apparent, however, because not every element has a governing category. In particular, the subject position of some nonfinite clauses has no governing category. Evidently, the distribution of PRO is crucially dependent on the definition of governing category, and hence linked to claims about the binding of pronouns. This connection and its derivation from BT are referred to as 'the PRO theorem.'

Notice that the PRO theorem depends crucially on the domain of Principles A and B being the same, for this was the basis of the apparent contradiction. But the identity of the two domains has another consequence: it implies that anaphors and pronominals will

be in complementary distribution wherever there is a governing category. For overt anaphors and pronominals, this consequence turns out to be a good first approximation, but not a reliable generalization. For example:

- (a) The children love their<sub>i</sub>/each other<sub>j</sub>'s parents. (15)  
 (b) John<sub>i</sub> expected that a picture of him<sub>i</sub>/himself<sub>i</sub> would be in today's newspaper.

Such deviations from fully complementary distribution of anaphors and pronominals can be accounted for either by permitting the domains of Principles A and B to be different, or by exempting certain pronouns from the principles. Both strategies have been explored in the literature; the issue remains an active topic of research. The complexity of the problem is compounded in languages like Norwegian which have possessive forms of reflexive pronouns, as seen in (16).

- Jon<sub>i</sub> beundrer sin<sub>i</sub>/hans<sub>i</sub> mor. (16)  
 John admires self's/\*his mother

In this case, it seems that the obligatory use of the possessive reflexive blocks a similar interpretation for the possessive pronoun, even though in other cases, such as (17) below, an alternation like that seen in (15) is more readily available.

- Jon<sub>i</sub> gjorde oss glad i huset sitt<sub>i</sub>/hans<sub>i</sub>. (17)  
 John made us fond of house self's/his

The idea that pronouns may be exempt from normal binding conditions in certain positions is supported by the existence of certain cases where anaphors are coreferential with antecedents which do not c-command them (18).

- John<sub>i</sub>'s most prized possession is the picture of himself<sub>i</sub> hanging in the living room. (18)

By definition, such an anaphor is not bound; hence, no modification of the characterization of the domains of the binding principles can cover such examples. Rather, they seem to be subject to a different set of constraints (see Sect. 1.4 for discussion of a related phenomenon).

### 1.3 Choice of Antecedents

In Sect. 1.2, the question of determining the domain in which antecedents are found has been treated. However, there are other constraints on the choice of antecedent even within the specified domain. For example, in many languages, but not English, only subject NPs can be antecedents for reflexive pronouns.

Norwegian is such a language. It has four anaphoric (sets of) forms, excluding the reciprocal. The pronoun *ham* is just like English *him*, and must be free in its clause, so both (19c) and (19d) are acceptable.

*Anaphora*

- (a) \*Ola<sub>i</sub> snakket om ham<sub>i</sub>. (19)  
Ola talked about him
- (b) \*Vi fortalte Ola<sub>i</sub> om ham<sub>i</sub>.  
We told Ola about him
- (c) Ola<sub>i</sub> vet at vi snakket om ham<sub>i</sub>.  
Ola knows that we talked about him  
'Ola knows that we talked about him.'

Another form is *ham selv* (lit. 'him self'), and this must be bound to a nonsubject within its clause. Unlike English; then, (20a) is ungrammatical.

- (a) \*Ola<sub>i</sub> snakket om ham selv<sub>i</sub>. (20)  
Ola talked about himself
- (b) Vi fortalte Ola<sub>i</sub> om ham selv<sub>i</sub>.  
We told Ola about himself  
'We told Ola about himself.'
- (c) \*Ola<sub>i</sub> vet at vi snakket om ham selv<sub>i</sub>.  
Ola knows that we talked about himself

The form *seg* is one that must take a subject antecedent. That antecedent must lie within the local tensed domain, but outside of the most local clause. This distinguishes examples (21c) and (21d). Hence, *seg* will only appear inside of infinitival clauses, and may in principle be arbitrarily far away from its antecedent, so long as only non-finite clauses intervene.

- (a) \*Ola<sub>i</sub> snakket om seg<sub>i</sub>. (21)  
Ola talked about self
- (b) \*Vi fortalte Ola<sub>i</sub> om seg<sub>i</sub>.  
We told Ola about self
- (c) \*Ola<sub>i</sub> vet at vi snakket om seg<sub>i</sub>.  
Ola knows that we talked about self
- (d) Ola<sub>i</sub> bad oss snakke om seg<sub>i</sub>.  
Ola asked us to-talk about self  
'Ola asked us to talk about him.'

In (21c) *seg* is bound by a subject outside of its minimal tensed domain, and so the example is bad. In (21d) the embedded clause is nonfinite, and this allows *seg* to take the matrix subject as antecedent.

Finally, the form *seg selv* must be bound to a subject within its clause.

- (a) Ola<sub>i</sub> snakket om seg selv<sub>i</sub>. (22)  
Ola talked about self  
'Ola talked about himself.'
- (b) \*Vi fortalte Ola<sub>i</sub> om seg selv<sub>i</sub>.  
We told Ola about self
- (c) \*Ola<sub>i</sub> vet at vi snakket om seg selv<sub>i</sub>.  
Ola knows that we talked about self

Subject-orientation of anaphors (those forms which must be bound, in some domain) is very common. Interestingly, reciprocals typically do not show such subject-orientation. For example, the Russian reflexive *sebjā* must be bound to a subject, while the reciprocal *drug druga* can be bound to nonsubjects.

Another not, uncommon choice for antecedent is the 'logical subject,' intuitively, the agent of the action. Compare the Norwegian examples in (23) with the Marathi examples in (24).

- (a) \*En politimann<sub>i</sub> arresterte Jon<sub>j</sub> i (23)  
sin<sub>i/\*j</sub> kjøkkenhave.  
A policeman<sub>i</sub> arrested John<sub>j</sub> in  
self<sub>i/\*j</sub>'s kitchen-garden.
- (b) Joh<sub>j</sub> ble arrestert av en politimann i  
sin<sub>i/\*j</sub> kjøkkenhave.  
John<sub>j</sub> was arrested by a policemen<sub>i</sub> in  
self<sub>i/\*j</sub>'s kitchen-garden.
- (a) Jon<sub>i</sub>-nii bil<sub>i</sub>-laa aaplyaa<sub>i</sub> gharaat maarle. (24)  
John<sub>i</sub>-ERG Bill<sub>i</sub>-ACC self<sub>i</sub>'s house-in hit  
'John<sub>i</sub> hit Bill<sub>j</sub> in self<sub>i/\*j</sub>'s house.'
- (b) Bil<sub>i</sub>-laa jon<sub>i</sub>-kaduun aaplyaa<sub>i</sub> gharaat maarle gele.  
Bill<sub>i</sub>-ACC John<sub>i</sub>-by self<sub>i</sub>'s house-in hit was  
'Bill<sub>j</sub> was hit by John<sub>i</sub> in self<sub>i/\*j</sub>'s house.'

In Norwegian, the antecedent of the reflexive *sin* is the grammatical subject, and hence changes under passivization. (Some speakers allow both indexed NPs in (23b) to antecede *sin*.) In contrast in Marathi, the antecedent is always the one performing the action, the logical subject, and cannot be the surface subject in a passive example like (24b).

Above, it was remarked that Principles A and B of the Binding Theory are (supposed to be) complementary in English. Generally, complementarity between anaphors and pronouns does not hold. For example, English allows many cases of overlap.

- John<sub>i</sub> thinks that these pictures of him<sub>i</sub>/himself<sub>i</sub> (25)  
are not very flattering.

In Marathi, a different situation obtains: there are two reflexive forms, *aapaN*, which is bound to logical subjects, and *swataah*, which is bound to surface subjects. However, the pronoun, *to*, is like English *him*, free from all co-arguments within its minimal clause.

As the data in this section indicate, there is significant variation across languages in the principles determining binding of anaphors. Determining the precise parameters and range of variation that is possible is a topic of considerable research in the late twentieth century.

*1.4 Logophors*

In some anaphoric systems, the choice of antecedent is not determined syntactically. Pronouns with this property are known as 'logophors'—the ones which are 'bearer of the word.' In the words of G. N. Clements, the antecedent of a logophoric pronoun must be the one 'whose speech, thoughts, feelings, or general state of consciousness are reported.'

In the West-African language Ewe, a special set of pronouns has logophoric uses. Here *yẽ* is a logophoric pronoun, and *e* is nonlogophoric.

(a) Kofi be yè-dzo. (26)  
Kofi say LOG-leave  
Kofi<sub>i</sub> said that he<sub>i</sub> left.'

(b) Kofi be e-dzo.  
Kofi say PRO-leave  
'Kofi<sub>i</sub> said that he<sub>i</sub> left.'

In other languages, the reflexive pronoun takes on a logophoric function. The examples in (27) are from Icelandic, and (28) are Japanese. In each case, the example is well-formed only if the antecedent of the reflexive was the source of some communication.

(a) Hann<sub>i</sub> sagði að sig<sub>i</sub> vantaði hæfileika. (27)  
He<sub>i</sub> said that self<sub>i</sub> lacked ability  
'He<sub>i</sub> said that he<sub>i</sub> lacked ability.'

(b) \*Honum<sub>i</sub> var sagt að sig<sub>i</sub> vantaði hæfileika.  
He<sub>i</sub> was told that self<sub>i</sub> lacked ability.'  
'He<sub>i</sub> was told that he<sub>i</sub> lacked ability.'

(a) \*Yamada ga Hanako<sub>i</sub> ni zibun<sub>i</sub> no (28)  
Yamada NOM Hanako<sub>i</sub> DAT self<sub>i</sub> GEN  
ie de atatakaku motenasareta  
house at warmly was-treated  
'Yamada was warmly entertained by Hanako<sub>i</sub> at her house.'

(b) Yamada ga Hanako<sub>i</sub> ni zibun<sub>i</sub> no  
Yamada NOM Hanako<sub>i</sub> DAT self<sub>i</sub> GEN  
ie ni kuru yoo ni tanomareta.  
house to come COMP was-asked  
'Yamada was asked by Hanako<sub>i</sub> to come to her house.'

Such phenomena are far from rare. Languages on every continent show some logophoric-type behavior. Even English reflexive pronouns show such sensitivity when they fall outside of the binding theory, as exemplified in (29).

John<sub>i</sub> was very angry. Those pictures of himself<sub>i</sub> (29)  
in the hot tub had been taken illegally.

One senses that the second sentence here is a reflection of John's thoughts. It is possible that this logophoric binding is also at work in examples like (18).

### 1.5 Other Kinds of Anaphora

The discussion thus far has been limited to pronouns that take NP antecedents. As noted in the opening paragraph, however, there are other kinds of anaphora. Some involve pronouns or other overt elements that take something other than NPs as antecedents. Others involve ellipsis—that is, a construction in which something seems to be missing, but can be understood from the context. Two issues have been the focus of attention regarding the syntax of these types of anaphoric elements: what are their possible antecedents; and whether an optimal analysis involves positing some sort of deletion of an identical 'copy' of the missing material.

It is shown in (30) that backwards anaphora is not limited to pronouns, and (31) shows that an analogue

to Principle C is operative in these cases, as well. (Coindexing will be used to indicate antecedence, even though BT is not applicable.)

(a) Anyone who wants to \_\_\_\_\_<sub>i</sub> can (30)  
[learn to lambada]<sub>i</sub>.

(b) Anyone who wants one<sub>i</sub> can buy a gun<sub>i</sub>.

(a) \*Pat did \_\_\_\_\_<sub>i</sub> after Chris [learned to lambada]<sub>i</sub>. (31)

(b) \*One<sub>i</sub> can be bought by anyone who wants to buy a gun<sub>i</sub>.

Thus, the structural relations that may obtain between anaphoric elements and their antecedents appear to be the same for a variety of types of anaphora.

In contrast, the types of antecedents seem to vary. In (30) it is shown that the appropriate elements can take VP (*learn to lambada*) or N' (*gun*) antecedents; (32) is an example with S serving as an antecedent; and (33) shows that, in some cases, nonconstituents (in this case, *make ... wash the floors*) may serve as antecedents.

I know that [Pat was here]<sub>i</sub>, but I don't know (32)  
when \_\_\_\_\_<sub>i</sub>.

They may make Pat wash the floors, but they (33)  
wouldn't do it to Chris.

Hankamer and Sag (1976) distinguished two classes of anaphoric elements. Anaphoric elements of the first class, exemplified by ordinary third-person pronouns, can derive their interpretations from anything that is semantically appropriate and contextually salient. The others, exemplified by VP ellipsis, require a linguistic antecedent of a certain syntactic type. They called these 'deep' and 'surface' anaphora, respectively. The following examples provide a minimal contrast between the two types:

[Pat tries to jump over a fence and trips] (34)

(a) Chris: I'll bet I could do it.

(b) \*Chris: I'll bet I could \_\_\_\_\_.

Likewise, surface anaphora requires a greater degree of syntactic parallelism between anaphoric element and antecedent than is required for deep anaphora:

(a) Pat's phone was tapped by the FBI, though they (35)  
claim they didn't do it.

(b) ?\*Pat's phone was tapped by the FBI, though  
they claim they didn't \_\_\_\_\_.

Hankamer and Sag argue that surface anaphora is the result of deletion under identity, but that deep anaphoric elements are base generated. There are a number of other arguments supporting a deletion analysis of surface anaphora. For example, the case marking in (36) depends on structure that can be missing on the surface.

- (a) Someone helped Pat, but I don't know who/\*whom (helped Pat). (36)
- (b) Pat helped someone, but I don't know who/whom (Pat helped).

This argument is even clearer in a language like German, where idiosyncratic case (such as the dative marking on the object of *helfen*) must be preserved.

- (a) Pat hat jemand geholfen, aber ich weiß Pat has someone helped, but I know nicht wem/\*wen (Pat geholfen hat). not who-DAT/\*who-ACC (Pat helped has) (37)
- (b) Pat hat jemand gesehen, aber ich weiß Pat has someone seen, but I know nicht wen/\*wem (Pat gesehen hat). not who-ACC/\*who-DAT (pat seen has)

However, examples like (38) pose a problem for deletion analyses, because the would-be deletion site is inside its antecedent, so that trying to reconstruct the predeletion structure leads to an infinite regress. This problem is not insurmountable, provided that the notion of 'deletion under identity' is formalized with appropriate care, but there is considerable controversy regarding how best to handle such phenomena. (The problem presented by such 'antecedent contained deletions' is reminiscent of a celebrated argument known as 'the Bach-Peters Paradox.' Examples like (i), it was claimed, show that pronouns cannot be transformationally derived from full copies of their antecedents, without positing infinite underlying structures. (i) [The pilot who shot at it]<sub>i</sub> hit [the MIG that chased him]<sub>i</sub>.)

- Pat [reads everything Chris does \_\_\_\_]<sub>i</sub>. (38)

Though the literature on these other types of anaphora is rich, there is no treatment of them that enjoys the same sort of currency as the Binding Theory for pronouns with pronominal antecedents.

## 2. Semantics

The nature of 'identity' which anaphora is supposed to represent has also been the subject of much research. For example, the VP-ellipsis examples in (39) show that strict (syntactic) identity is not at the basis of such constructions.

- A: Do you think they'll [like me]<sub>i</sub>? (39)  
B: I'm sure they will \_\_\_\_<sub>i</sub>.  
= 'like you'  
≠ 'like me'

As indicated, what is reconstructed is not the form *like me*, but rather some semantic unit 'like x,' where x is anchored to the speaker for the first sentence (and hence would be referred to as *you* by B).

### 2.1 Coreference

The usual idea about pronominal anaphora is that the pronoun refers to the same individual as the

antecedent—thus, the two corefer. An example like (40a) then, would be interpreted as in (40b).

- (a) John<sub>i</sub> read his<sub>i</sub> mail. (40)  
(b) John<sub>i</sub> read John<sub>i</sub>'s mail.

However, coreference is just one semantic relation between a pronoun and its antecedent.

### 2.2 Bound Variables

If the interpretation of anaphora just involved coreference, then an example like (41) would mean that Max read John's mail, for the reconstructed VP would be 'read John's mail.'

- John<sub>i</sub> read his<sub>i</sub> mail and Max did too. (41)

However, this sentence clearly has another interpretation, under which Max read his own mail. This is even clearer in (42). (Note that the concern here is only with the set of possible interpretations; the issue is not about preferences for a particular interpretation on a particular occasion of utterance.)

- John<sub>i</sub> read his<sub>i</sub> mail before Max did. (42)

Here, the content of the VP that is being reconstructed and predicated of Max seems not to be what is paraphrased in (43a), but (43b).

- (a) An x such that x read John's mail. (43)  
(b) An x such that x read x's mail.

The second 'x' corresponds to the pronoun, and indicates that the pronoun is being interpreted like a variable (say, a variable in first-order logic); its *reference* varies with whatever value is assigned to x. Hence, this is known as the 'bound variable' interpretation of a pronoun.

Following the interpretation of a variable in logic, it can be shown that reference is not relevant at all for the bound variable interpretation of a pronoun. In (44), the existence of any relevant individuals is denied, but the pronoun still may take the NP *no manager* as its antecedent, and receives a bound variable interpretation—whichever manager one chooses, it is not the case that he read his mail on Friday.

- No manager<sub>i</sub> read his<sub>i</sub> mail on Friday. (44)

Additionally, a pronoun may only be bound as a variable by a quantifier which has scope over it. Consequently, while anaphora is possible in (45a), it is blocked in (45b).

- (a) Each guest<sub>i</sub> brought a present which she<sub>i</sub> had picked out at Macy's. (45)  
(b) Each guest<sub>i</sub> brought a present. \*She<sub>i</sub> had picked it out at Macy's.

Even though the coreferential and bound variable uses of pronouns are distinct, they both obey the Binding Theory: in (46) below, the quantified NP



every ballerina may (logically) take scope over the rest of the sentence, but nevertheless the anaphora indicated is not possible. This is because the syntactic configuration violates Principle C of BT.

\*She<sub>i</sub> danced on every ballerina<sub>i</sub>'s toes. (46)

These observations indicate that the coindexing that BT refers to may not have a uniform semantic interpretation: sometimes it may represent coreference, and sometimes the binding of a variable (see Evans 1980, Reinhart 1983).

### 2.3 E-type Pronouns

Examples like the following have been claimed to show that other interpretations of anaphora are possible.

Farmer Jones owns some sheep<sub>i</sub>. The village vet examines them<sub>i</sub> every spring. (47)

The reasoning is as follows: the antecedent *some sheep* does not really refer to a particular group of sheep, but rather just asserts the existence of some such group. Hence it would be odd to think of the pronoun *them* as coreferring. Yet, if the pronoun were interpreted in the other way, as a variable, then (47) should have an exact paraphrase in (48) (a relative pronoun always gets the variable interpretation).

Farmer Jones owns some sheep<sub>i</sub> which<sub>i</sub> the village vet examines every spring. (48)

However, the two do not seem to mean the same thing; (47) seems to say that the vet examines all of Jones's sheep, while (48) seems to say that the vet only examines some of them. Hence, the pronoun is not receiving the variable interpretation, either. This new interpretation is known as the 'E-type reading' (after G. Evans).

In other examples, the pronoun is clearly neither coreferential with its antecedent, nor a bound variable.

The man who gave his paycheck, to his wife is wiser (49) than the one who gave it, to his mistress.

Here, the pronoun seems to be functioning simply as a shorthand for a repetition of its antecedent (*his paycheck*).

### 3. Conclusion

The period since the mid-1960s has seen significant progress in the understanding of the range and complexity of anaphoric types, the most prominent of which have been surveyed here. However, many important aspects of analysis still remain to be discovered, for example for the 'paycheck' sentence just mentioned, or the *weak crossover* structures in (14). The bibliography cites works which have been influential in setting out problems and/or suggesting approaches for their solution.

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## Apposition

N. Burton-Roberts

At its most general, 'apposition' is a loose term that applies to any juxtaposition of two (or more) expressions. More specifically and usefully, it is canonically applied to cases where the expressions have the same syntactic function (and thus tend to be of the same syntactic class) and in which the elements are offered by the speaker as being in some sense equivalent. When this is so, the expressions are described as being in apposition even when not juxtaposed. The term is

most often applied to Noun Phrases (NPs) as italicized in (1) and (2).

I wasn't even introduced to *Professor Xerxes*, (1)  
*the man who first had the idea*

Two saints are buried here, *St Andrew and* (20)  
*St Matthew*.

But apposition is quite general: for example, apposition of Verb Phrases in (3),



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- He took it without permission, *filched it*. (3) We/us/you doctors (16)
- of Verbs in (4), President Kennedy (17)
- They *ran—sprinted*—up the hill. (4) Bill himself (18)
- of Adjectives in (5), Matters are further complicated by use of the term 'appositive relative clause' by generative grammarians for non-restrictive relative clauses and of 'appositive clause' (by Quirk, et al. 1985) for noun complement clauses.
- I'd do it under *normal, peacetime*, conditions. (5)
- of Prepositional Phrases in (6),
- It was *at about seven o'clock* that they left, *just before sunset*. (6)

and so on. A good idea of the general character and rhetorical functions of apposition can be got from the expressions which may occur between, or following, the elements and which serve as explicit markers of apposition. These include: *that is (to say), i.e., in other words, by which I mean, in short, to be more precise, for example, namely, or (rather), (or) at least*, and even *you know* as in (7),

- That pest*, you know, *Sir Oliphant Pettigrew*, (7)  
has been in again.

Although usable only in the clearest cases, these expressions serve to show, in such cases, that apposition is an extremely loose kind of relation (and arguably not a genuine syntactic relation at all) in which the second element is offered as a parenthetical, and sometimes metalinguistic, gloss, elucidation, reformulation, translation, or even correction, of the first. Note the corrective apposition of the preposition in (8).

- This is different *than*—or rather, *from*—the others. (8)

So loose is the relation that apposition may even be allowed between complete and syntactically independent sentences in a discourse, as in (9) and (10).

- The library was totally disorganized: not a book was (9)  
in its proper place.
- The girls sent him to Coventry: they simply refused (10)  
to speak to him.

Were the terms 'apposition' and 'appositive' restricted to cases like those in (1)–(10), apposition could be described in unified terms as a *performance* or *discourse* phenomenon sometimes exploited, and hence conventionalized, as a rhetorical figure. However, the term is used more widely, to include a range of constructions (sometimes referred to as 'Close Apposition') in which the relation clearly is syntactic (though not in all cases well understood), for example:

- The poet Clare (11)
- The River Thames (12)
- The letter 'C' (13)
- Othello the play (14)
- The city of Naples (15)

### 1. Criteria for Apposition

What counts as apposition depends of course on what criteria are adopted and on how strictly they are adhered to. Two central criteria frequently cited are (a) elements in apposition should converge in extra-linguistic reference (strictly this criterion focuses on apposition of NPs, as shall be seen in the following examples) and (b) they should be capable of being understood as having the same syntactic function with respect to the same other elements in sentence structure. The expressions mentioned above are 'apposition markers' precisely because they seem to indicate that these criteria are satisfied. Criterion (b) excludes *you* (subject) and *yourself* (object) in (19),

- You should wash yourself. (19)

*you* (object) and *John* (vocative—if 'vocative' is a syntactic function) in (20),

- They've promoted you, John. (20)

Criterion (b) would seem to guarantee that each apposed element should be able to function independently (and hence in the absence) of the other, and that any sentence containing an apposition of sentence constituents can be expanded into an apposition of full sentences without change of meaning. Thus, corresponding to (1) above, both (21) and (22) are arrived at,

- I wasn't even introduced to Professor Xerxes. (21)
- I wasn't even introduced to the man who first had (22)  
the idea.

and (1) itself can be expanded without change of meaning into.

- I wasn't even introduced to Professor Xerxes, (23)  
(that's to say,) I wasn't even introduced to  
the man who first had the idea.

These two criteria, if strictly adhered to, are of some significance, since (for reasons outlined below) they serve to distinguish apposition both from the general relation of coordination (covering the conjunction and disjunction of joint heads) and from that of subordination (covering the subordination of modifiers and of complements to a single head). The significance of this is that these are the only fundamental types of syntactic relation generally admitted between elements in an endocentric construction (see

e.g. Blomfield 1933: 195). (An endocentric construction is one that has a head. Note that, if apposition is a construction, it clearly is endocentric.) From this it must be concluded either (i) that apposition is indeed not a genuine syntactic relation, in which case alternative analyses (and labels) must be found for the genuine structural relations exhibited in the headed constructions in (11)–(18), or (ii) that there are, after all, three fundamental types of syntactic relation: co-ordinative, subordinative, and appositive. Many grammarians would want to resist (ii) on the grounds that it multiplies the number of fundamental types (and hence results in loss of generality) but without a corresponding increase in insight since, if all of (1)–(18) are held to exemplify this third type, ‘apposition’ can be little more than a label for an ill-understood and ill-assorted range of phenomena. Against this, other grammarians suggest that apposition provides a nice illustration of the idea that language is more indeterminate and ‘messy’ than acknowledged by more formal grammarians and is best described in terms of Wittgenstein’s concept of family resemblance rather than absolute discrete categories (see Matthews 1981: ch. 10; Quirk, et al. 1985: ch. 17; Meyer 1992; for critical discussion, see Acuña 1999). A possible danger of the indeterminacy thesis is that, adopted as a heuristic for research, it can be self-fulfilling: failure to discover, search for, or abide strictly by, appropriate and robust criteria will tend of itself to result in the predicted indeterminacy.

## 2. Apposition, Co-ordination, and Subordination

As mentioned, apposition is distinct from co-ordination as traditionally analysed, but they bear some resemblance. This consists in the fact that, in a canonical apposition, neither of the elements is taken to be subordinate to the other (implied by criterion (b)) so that, if apposition is taken to be a construction, each of the apposed elements must be regarded as a head of the apposition. This is precisely how the conjuncts/disjuncts in co-ordinate structures are traditionally treated (though not in more recent X-bar theory, see Borsley 1994 for review and a critique). On these terms, in short, apposition and co-ordination share a unique property: they have multiple heads. The distinction between apposition and co-ordination is brought out by the co-reference criterion (a). Co-ordination (conjunctive or disjunctive) of co-referential elements results in semantic oddity. Thus if (24)

Olsen and the First Mate were keeping quiet. (24)

is semantically well-formed, it entails that Olsen and the First Mate are distinct. Conjunctions of NPs are referentially additive; they create pluralities (note the plural verb in (24)). By contrast, apposition is referentially reduplicative (note the singular verb in (25)).

Olsen, the First Mate, was keeping quiet. (25)

Note that (26) is ambiguous.

Olsen, the First Mate, and Mona were keeping quiet. (26)

*The First Mate* can represent either a conjunctive addition in a three-way co-ordination or an appositive reduplication of *Olsen* in a binary co-ordination.

Apposition resembles disjunctive (*or*) co-ordination even more closely since, like apposition, disjunction is not referentially additive and hence not pluralizing. Note the singular verb in (27).

Either Olsen or The First Mate usually closes the hatch. (27)

Indeed, NPs in apposition may be connected by *or*, as in (28),

Olsen, or the First Mate (as we must call him now), usually closes the hatch. (28)

but with two crucial differences. Firstly, while ordinary disjunction can be introduced by *either*, the use of *either* precludes an appositional reading (thus (27) must be an ordinary disjunction and entails that Olsen and The First Mate are distinct, and (28) with *either* would be anomalous). Secondly, in apposition, but not ordinary disjunction, the second element is always parenthetical note the obligatory commas in (28), in contrast to the lack of commas in (27). However, while apposition and ordinary disjunction are distinct, they are undoubtedly connected: NPs as ‘ordinary’ disjuncts, offer a disjunction of (*or*, choice between) distinct real-world individuals, while NPs in apposition offer a disjunction of distinct linguistic means for identifying a single real-world individual. Hence appositional *or* might be described as a special metalinguistic use of the standard disjunctive connective.

As regards the distinction between subordination and apposition, it needs to be noted that the relation of subordination is asymmetric: one (but not both) of the elements is subordinated to (and depends on) the other in virtue of functioning either as its specifier, its complement, or as an adjunct and this other element functions as the head of the whole expression. Thus the elements in a relation of subordination necessarily have different functions, and apposition is thereby distinguished from subordination at least by criterion (b) above, since that criterion imposes a functional parallelism (and independence) on elements in apposition.

## 3. Alternatives to Apposition

This section follows up the suggestion that, by criteria (a) and (b), apposition cannot be regarded as a syntactic relation in a headed construction. As explained in Sect. 1, this entails investigating alternative approaches to the headed constructions in (11)–(18). Consider (11), the NP *The poet Clare*, often regarded as an example of (‘close’) apposition on the grounds

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that it can be seen as consisting of *the poet* and *Clare*, each of which is an NP capable in principle of independent reference and hence co-reference with the other. An alternative possibility is that *Clare* is the (single) head of the NP and is attributively modified by *poet*, the whole NP being determined by the specifier *the*. This approach suggests that the apparent possibility of analysis into two (co-referential) NPs is fortuitous, due simply to the co-incidence of the modifier happening to be a noun and the head a proper noun – a name, normally understood as having uniquely identifying reference. But the very use of (11) suggests that, in the context of utterance, *Clare* by itself would not in fact suffice to identify a unique individual. This modifier-head analysis (arguably applicable to (12) and (13)) would be favored on the grounds that it involves no special assumptions: one must anyway allow for nouns as modifiers (*football hooligan*, *filmstar status*) and for the modification of names (*the Borg of Wimbledon fame*, *a pensive Holmes*). Note that on this analysis *the* + *poet* not only lacks particular reference, it is not even a constituent and hence not an NP. Against the analysis, it does not of itself explain the (related) structure *Clare the poet* and (14) above, in which *the poet* and *the play* clearly are NPs. But again, the very use of these suggests that in the context of utterance *Clare* and *Othello* are not in fact uniquely identifying. (14) restricts the range of reference of *Othello* to exclude the eponymous hero of the play, and *Clare the poet*, like (11) but more emphatically, restricts the reference of *Clare* to exclude other individuals of that name or other facets of that individual (cf. *Clare the naturalist*). This suggests that *the poet/play* is a restrictive post-modifier, possibly the remnant of an attributive reduced relative clause. An explanation of why it remains in post-head position might be sought in the fact that the head is a proper noun (cf. *Catherine the Great*). The structure of the above expressions is the subject of much uncertainty and disagreement, however (see Huddleston 1984, Jackendoff 1984, McCawley 1998).

With regard to its syntax, (15), *The city of Naples*, poses no special problem, having *city* as head and *of Naples* as a subordinate modifying prepositional phrase. If there is a special problem (and hence a reason for regarding (15) as an example of apposition, with a special 'appositional' *of*), it is semantic, brought out by comparing (15) with e.g., *the music of Naples*, which refers not to Naples itself but to its music (consistent with taking *music* as head). By contrast, (15) does refer to Naples itself, a reference that might appear to be determined entirely by the subordinate modifier on the above analysis and hence not strictly consistent with that analysis. In fact, however, the head of (15) is involved in determining the reference: for, as already demonstrated, were the head not *city*, but *music*, (15) would not in fact refer to the city of that name. Furthermore although *Naples* is usually

taken to refer to the city, it should be noted that, in itself (and like other so-called 'place names'), it is quite vague in its reference, for Naples is a multifaceted entity (cf. *The kingdom of Naples*, *I spoke to Naples on the phone*, *Washington is taking a hard line*, *the city of Rome versus the Church of Rome*). If the intuitive difference between *The music of Naples* and *The city of Naples* is a matter of syntax as such, it might be accounted for by proposing that the PP functions as complement with respect to *city* but as adjunct with respect to *music*. This would explain the oddity of *The city and music of Naples*. See McCawley 1998: 474 for a puzzling survey of expressions like (15).

That the expressions in (16) have been regarded as examples of apposition may be due to a reluctance to allow that non-possessive personal pronouns (e.g., *we*, *us*, *you*), which standardly function as full NPs capable of independent reference, might also function as definite determiners/specifiers (along with other pronouns e.g., *this*, *some*). See Postal 1966 (and, for a contrary view, Delorme and Docherty 1972). It is arguable that *we*, while clearly involved in determining the reference of (16), does not itself have independent reference in that construction (thus failing criterion (a)). On this analysis *we doctors* is not by any criterion an example of apposition but is an NP consisting of Specifier plus head noun. (Note that the oddity of *\*I/you/he doctor* remains unexplained on both this and the apposition analysis.) More speculatively, it is worth considering whether the range of specifiers/determiners might not be extended to include titles such as *President* in (17) and *Mr*, *Mrs*, *Sir*, and *Lord*. It is certainly the case that the grammar of names and titles, being somewhat *sui generis* is little understood and little studied; but characterizing (17) as 'apposition' does not remedy this.

In (18), finally, there is an example of the poorly understood emphatic reflexive (*Bill himself admitted it* and *I did it myself*), so called to distinguish it from the more central use of reflexives exemplified in (19) above. Although clearly dependent on *I*, and *Bill* in (18), both syntactically and referentially, the syntactic function of the emphatic reflexive is problematic; and again, while a special analysis in terms of 'apposition' might be taken to reflect this problem, it does not resolve it.

## 4. Apposition, Attribution, and Relative Clauses

Example (29) includes a sequence of NPs,

A shy man, Olsen seldom speaks. (29)

but the lack of comma (or comma intonation in speech) following *Olsen* has always been taken to distinguish that sequence from apposition, since it seems to indicate that *A shy man* and *Olsen* do not have the same function: *Olsen* functions as subject while *a shy man* represents a subordinate verbless absolute clause (compare *Being a shy man*) in which

it functions as an attributive expression. This sequence of NPs thus fails criterion (b). Furthermore, and more generally, if an NP can be construed as attributive of another (as e.g., *a sailor* is of *Olsen* in *Olsen is a sailor*) it cannot be a referring expression; reference and attribution are mutually exclusive. Thus, since only one of the NPs in (29) (*Olsen*) is a referring expression, they cannot be co-referential (criterion (a)). On the same grounds, but perhaps less obviously, the sequence of NPs in (30) cannot be regarded as apposition either,

Olsen, a shy man at the best of times, seldom spoke. (30)

since the presence of the adverbial prepositional phrase in *a shy man at the best of times* again indicates a subordinate verbless clause in which the NP functions attributively. Even in the absence of the adverbial, *a shy man* in (30) is still most naturally construed as attributive of, rather than having the same function as, the subject *Olsen* since: *A shy man seldom spoke* is not equivalent to (30) even ignoring the adverbial in the latter. Note that, with or without the adverbial (30) does not accept any of the apposition markers listed above (e.g. *that's to say*).

Note the intuitive equivalence between (30) and (31):

Olsen, who was a shy man at the best of times, seldom spoke. (31)

(31) includes an attributive non-restrictive relative clause. This suggests that *a shy man* in (30) represents the reduction of such a clause (i.e., with relative pronoun and copula omitted). The foregoing discussion thus implies that apposition proper is to be distinguished from attributive non-restrictive relative clauses and reductions thereof. The difference between an apposition analysis and a reduced relative clause analysis amounts to this: on the apposition analysis suggested by criteria (a) and (b), (1) above is regarded as equivalent to (23) above, which is propositionally reduplicative,

I wasn't even introduced to Prof Xerxes, (32)  
(that's to say), I wasn't even introduced  
to the man who first had the idea.

while on the reduced relative clause analysis, (1) would be regarded as equivalent to (32), which is propositionally additive (and hence not consistent with the criteria for apposition).

I wasn't even introduced to Prof Xerxes and (32)  
Prof Xerxes was the man who first had the idea.

See Burton-Roberts 1975.

## 5. Apposition and Parentheticals

In Sect. 4, apposition was distinguished from relativization (see also McCawley 1998: Ch. 13e, Blakemore 1996). The fact that non-restrictive relative clauses (whether or not reduced) are called

'appositive' in the generative tradition is hardly more than an historical accident and carries with it no claim about the nature of apposition proper, which is little studied in that tradition. Nevertheless, this use of 'appositive' for non-restrictive relative clauses is not entirely inappropriate, for such clauses have in common with apposition proper a parenthetical (interpolatory) character, and this creates problems in deciding how they, and parentheses in general, fit into the syntactic structure of the sentences in which they occur (if indeed they do, see Burton-Roberts 1999 and references therein). This has a bearing on the use of the term 'appositive' (by Quirk, et al. 1985) for what are otherwise and more generally known as noun complement clauses, as italicized in (33)

The thought *that it might be you in disguise* never occurred to me. (33)

For such clauses may occur parenthetically, as in (34):

The thought, *that it might be you in disguise*, never occurred to me. (34)

Although this does not constitute sufficient reason for calling such clauses 'appositive' when *not* parenthetical, the parenthetical noun complement clause is indeed analyzable as an elliptical apposition of two NPs: *the thought* and *the thought that it might be you in disguise*. And on this analysis, it is not surprising that in (34) one can indeed insert the apposition marker *namely*.

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## Aspect: Basic Principles

Ö. Dahl

The term 'aspect' is used in both a narrower sense, in which it refers to grammatical categories which have to do with the structure of a situation or the speaker's perspective on it, and a wider sense, in which it also covers lexical and notional (semantic) categories relating to the classification of situations (states of affairs). The term *Aktionsart* is often used to denote the latter. Crosslinguistically, grammatical aspect, alongside the categories tense and mood, plays a central role in verbal morphology.

### 1. The Distinction between Aspect and Aktionsart

The term 'aspect,' like its companion term *Aktionsart*, has a long and tangled history, the details of which would deserve at least a monograph. There remains little consensus about their use.

The origin of the term 'aspect' is somewhat curious in that it seems to have undergone a two-step loan translation process, during which the meaning has been significantly changed. The Russian term *vid*, which the English word (via French) derives from, most frequently means 'kind type,' and in its grammatical use is a translation of the Greek *eidos* which also has that meaning. In connection with verbs, it was originally used to refer to the distinction between simple and derived lexical items. *Aktionsart*, on the other hand, is a late nineteenth-century substitute for the term *Zeitart* introduced by G. Curtius, used to refer to the distinction between the different verbal stems in Greek, and was not clearly separated from aspect until S. Agr  l in 1908 made the distinction between the terms that subsequent work in the area builds on. Thus the two terms have developed in opposite directions, and with some exaggeration could be said to have swapped places in conceptual space. No acceptable English translation of *Aktion-sart* has yet been found, so the German term is commonly used, with or without a capital A.

The general fact which the study of aspect and *Aktionsart* sets out from is that most linguistic utterances concern situations or states of affairs and their manifestation in time. The first possible way of defining the two terms builds on a distinction in how these phenomena may be approached. According to this view, *Aktionsart* would be a classification of states of affairs, whereas aspect would refer to different perspectives or ways of viewing one and the same state of affairs. The difference is sometimes described in terms of the distinction between 'objectivity' and 'subjectivity,' in that aspect would depend on the individual perceiving or conceiving of the state of affairs rather than on properties of the state of affairs itself. Alternatively, aspect would refer to the ways in which

states of affairs may be related to time. On this hypothesis, aspect might still be an objective category.

The other major ways of distinguishing aspect and *Aktionsart* are not purely semantic or notional but involve also the ways in which the concepts in question are reflected in language, in particular the level of description to which they pertain. Thus, *Aktionsart* may be seen as a category pertaining to the lexicon, where aspect is defined as a grammatical category. Alternatively, *Aktionsart* may be restricted to the domain of derivational morphology. Below, these different levels will be distinguished as lexical, grammatical, and derivational aspect.

One may also encounter definitions which restrict the two terms to more specific distinctions, grammatical or notional. Thus, especially in Slavic linguistics, the term 'aspect' is constrained to denote only the opposition between perfective and imperfective aspect (often only in the specific manifestation found in Slavic). The term *Aktionsart*, on the other hand, is sometimes regarded as primarily denoting the distinction 'telic/atelic' or 'bounded: unbounded.'

In addition, many scholars do without the term *Aktionsart*, either by letting aspect cover the whole area, or by using 'aspectuality' or 'actionality' for the general semantic domain.

The various definitions listed above are not necessarily incompatible with each other. The view of the distinction as one between 'lexical' and 'grammatical,' for instance, is often connected with the idea that there is a definite distribution of labour between lexicon and grammar, for example, that 'objective' distinctions are taken care of by the former and 'subjective' distinctions by the latter. Whether this is in fact the case is, however, an empirical question.

The view taken here can be summarized as follows. The sum of the phenomena for which people have been using the terms 'aspect' and *Aktionsart* forms a conceptual domain which is reflected linguistically both lexically and grammatically. Categories described as 'grammatical aspect' arise diachronically by processes of grammaticalization which may be of different types. One common type of grammaticalization, and the one that has attracted most attention, gives rise to morphemes which serve as grammatical markers of aspect from lexical items. In another type of grammaticalization process, sets of lexical items, distinguishable by their meaning or derivational structure, are integrated into aspectual paradigms. Since such processes are gradual, the result may be a layered structure of increasingly grammaticalized categories, displaying a continuum of meanings from more 'Aktionsart-like' to more 'aspect-like' ones. This

somewhat abstract account will be fleshed out with concrete examples below.

## 2. Lexical Aspect and Situation Taxonomy

Central to the notion of lexical aspect is what Comrie (1976) calls the 'inherent aspectual meaning' of verbs. Different verbs seem to denote different kinds of situations or states of affairs. Thus, *die* denotes a punctual event, whereas *sleep* denotes a prolonged state. On the basis of this, one may construct a taxonomy of verbs according to their inherent *Aktionsart* or aspectual meaning (see *Aspectual Type*). However, the type of state of affairs talked about depends not only on the choice of verb but also on several other factors. A phenomenon that has received considerable attention since the 1980s is the interaction between verb meaning and the quantification of verb complements. Thus, (1a) is naturally interpreted as a non-bounded (atelic) event, whereas (1b) is bounded (telic).

He walked. (1a)

He walked to the door. (1b)

A taxonomy of verb lexemes will therefore at best yield the basic or typical state of affairs that a verb will be used about. Generally, there is great flexibility in the ways in which individual lexemes can be used, but there are often language-specific limitations to this flexibility. Thus, whereas the English verb *cough* may be used both to talk about a single cough—a basically punctual event—or about a prolonged activity, analyzable as a series of such individual cough events, many languages will have two verb lexemes for the two types of state of affairs. For instance, in Hungarian, the sentence 'He coughed' might be translated in two ways, as in (2).

Köhintett 'He coughed (once).' (2a)

Köhöggöt 'He coughed (more than once).' (2b)

Typically, the verbs in such verb pairs are derivationally related. Derivational processes, then, may influence the aspectual character of a word. In Sect. 3, the interaction between derivation and aspect/*Aktionsart* will be examined more closely.

## 3. Derivational Aspect

Derivational aspect, often identified with the notion of *Aktionsart*, has been relatively little studied from a comparative point of view. Given also the fact that derivational processes, by their nature, lend themselves less easily to systematization than inflectional categories, the best way of displaying the range of derivational aspect may be to look at an individual example of a language with a rich inventory of derivational aspectual processes. The following is a selected subset of the Russian *Aktionsarten* found in Isačenko (1962), according to whom the additional meanings

carried by the *Aktionsarten* relate to different phases or to quantitative or qualitative gradations of a process, or to its inner structure:

- I. 'Phasal meaning':
  - A. Ingressive: *pet'* 'sing' → *zapet'* 'begin to sing'
  - B. Evolutive: *kričat'* 'shout' → *raskričat'sja* 'start shouting, raise a cry'
  - C. Delimitative: *sidet'* → *posidet'* 'sit for a little while'
  - D. Resultative:
    - (a) resultative proper ('the action is led to a successful completion'): *brit'sja*: *probrit'sja* 'shave'
    - (b) terminative ('completion of action'): *pet'* 'sing' → *propet'* 'to sing the whole of'
    - (c) perdurative (duration of an action throughout a given period of time): *spat'* 'to sleep' → *prospat'* (*vsju noč'*) 'sleep through (the whole night)'
    - (d) finitive ('action is completed and has stopped'): *obedat'* 'have dinner' → *otobedat'* 'finish having dinner'
    - (e) total ('action comprises the whole object or all objects, exhausts the object'): *pisat'* 'write' → *ispisat'* (*vsju bumagu*) 'write (the whole paper) full'
    - (f) cumulative:
      - (i) cumulative proper: *ezdit'* 'ride, drive' → *naezdit'* (*sto kilometrov*) 'obtain a mileage of (100 kilometers)'
      - (ii) partitive-cumulative: *kupit'* 'to buy' → *nakupit'* (*massu veščej*) 'to buy (a lot of things)'
      - (iii) cumulative-distributive: *stroit'* 'to build' → *nastroit'* (*domov*) 'build a whole lot of (houses)' → *ponastroit'* (*domov*) 'by and by build a whole lot of (houses)'
- II. Quantitative meaning:
  - A. Attenuative: *razvleč'* 'to entertain' → *porazvleč'* 'entertain a little'
  - B. Momentaneous: *zevat'* 'yawn' → *zevnut'* 'yawn once'
- III. Iterative:
  - A. Iterative proper: *sidet'* 'sit' → *sižyvat'* 'sit now and then'
  - B. Diminutive iteratives: *kašljat'* 'cough' → *pokašlivat'* 'cough a little now and then'
- IV. Distributive:
  - (a) object-distributive: *kusit'* 'bite' → *perekusit'* 'bite each member of a set (in turn)'
  - (b) subject-distributive: *vsko čit'* 'jump' → *povskakat'* 'jump (of each member in a set)'

In addition to the *Aktionsarten* listed above, Isačenko also lists a number of formations with rather more specific meanings, such as 'saturative': *pljasat'* 'dance' → *napljasat'sja* 'dance to one's heart's content.' Many of these are somewhat difficult to encompass fully within the characterization which he gives of the possible meanings of the *Aktionsarten*, something which suggests a certain fluidity in this notion (see below for further discussion).



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The range of meanings expressed by the Russian derivational *Aktionsarten* actually fairly well covers most of the types of derivational aspect found among languages. An example (noted above) of a distinction commonly made derivationally is that between 'single punctual event' and 'prolonged activity analyzable as a series of simple events.' In Russian, example (2) would come out as in (3):

On kašljanul 'He coughed.' (3a)

On (po)kašljaj 'He coughed.' (3b)

To show a similar distinction from some unrelated languages, consider Navajo, example (4):

yi's'iz 'pedal (a bicycle)' (4a)

yi'iz 'give it a single tap with the foot' (4b)

or what Whorf (1956) called the 'punctual and segmentative aspects' in Hopi (5):

he'ro 'he gives out a sudden hollow gurgle from within' (5a)

hero'rota 'he is snoring.' (5b)

This 'semelfactive durative' distinction is one example of the general semantic domain aptly termed 'verbal plurality' by Dressler (1968). Verbal plurality crosslinguistically forms a central part of processes of derivational aspect, but at the same time it shows the difficulties involved in delimiting the notion of derivational aspect (*Aktionsart*) already mentioned. Consider the notion of 'distributive.' The meaning element common to most formations for which this term is used is that an action is distributed with respect to some parameter, which may be identified by some argument of the verb (subject, direct object, indirect object) or may be the time or place of the action. In Russian, distributive formations are often said to be connected with an implication of successivity ('in turn,' 'after each other'). However, in many languages, the same derivational morphemes may be used to express successive and nonsuccessive action. Thus, in Pomo (Hokan), the morpheme *-w-* glossed as 'plural action' may express that an action is performed 'either simultaneously by different agents or sequentially by the same agent' (Moshinsky 1974: 64), as in example (6):

ʔkó-w-čit 'many feed the fire' (6a)

qmú-w-lit 'he tastes them sequentially (as at a wine-tasting).' (6b)

Given that the number of agents would not usually be seen as an aspectual notion, it seems that wider definitions of aspect/*Aktionsart* than are usually found would be necessary to cover such examples. However, another possible conclusion is that one is dealing with still another example of overlapping domains in grammar. It is also probable that, histori-

cally, the successivity element may yield to a wider interpretation of plurality.

'Verbal plurality' is very often expressed by reduplicative processes. Sometimes, different derivational processes in the same language exploit different types of reduplication, as in the examples (7) from Mokilese (Micronesian):

kak	bounce once	(7)
kakkak	bounce more than once, continuously	
kakkakkak	keep bouncing.	

#### 4. Grammatical (Periphrastic and Inflectional) Aspect

In the area of grammatical aspect, one may distinguish a number of major types of categories on the basis of their semantics, viz. (a) progressive, (b) habitual, (c) completive, and (d) imperfective: perfective. All these may be expressed either periphrastically (analytically) or inflectionally (synthetically), but the proportions differ widely for the four types, inflectional expression being dominant only for imperfective: perfective categories. The types (b-d) may also exhibit derivational-like properties to varying extents.

The category of 'perfect' (to be distinguished from 'perfective'), which is variously regarded as an aspect or as a tense, is treated in a separate article (see *Perfect*).

##### 4.1 Progressives

Constructions with roughly the semantics of the English progressive (*I am writing*), that is, with the basic meaning 'on-going process,' are found in a wide range of languages from all parts of the world. The most common case is perhaps that the use of progressives is optional, although a fair number of cases behave like the English progressive in being more or less obligatory whenever an on-going process (most typically with reference to the moment of speech) is referred to. Progressives tend to be restricted to nonstative verbs. The overwhelming majority of progressive constructions in the world's languages are periphrastic and originate in various types of phraseological constructions, often with an original spatial meaning, such as 'be at doing something.' Progressives often develop into imperfectives (see Sect. 4.4).

##### 4.2 Habituals

Most, perhaps all, languages have means of indicating that a state of affairs occurs habitually or regularly. These means may become grammaticalized to a greater or lesser degree, in the end forcing anything that occurs on more than one occasion to be marked grammatically. Habitual meaning, which in English is most clearly expressed by the adverb *usually*, should be distinguished on the one hand from iterativity, that is, repeated occurrences of an action on one and the same occasion (*John jumped up and down*), and on the other from genericity, that is, the statement of lawlike

properties of species and individuals (*Beavers build dams*).

The borderlines are not very sharp, however, and grammatical markers of habituality may include both iterative and generic uses. In particular, generic sentences tend to be expressed by maximally unmarked members of tense-aspect systems (such as the simple present in English).

Most markers of habituality are periphrastic, but a few examples of inflectional habituals can be found, for instance, in the Eskimo (Inuit) languages. Derivational iteratives are plausible diachronic sources for inflectional habituals.

In addition to habituals that can be used of the present, the past, and the future alike, one also quite often finds 'past habituals,' that is, forms or constructions which are used exclusively to refer to habitually occurring events in the past. These seem to be more prone to be expressed morphologically (examples are Bengali; Bandjalang (Australian)).

A common phenomenon is for habituals to be restricted to past time reference (cf. the construction *used* in English).

#### 4.3 Completives

The label 'completive' is used here as alternative cover term for a rather ill-defined set of phenomena, having in common that at least one of their meanings is to stress the completion of an action, or focus on the concluding phase of a process. For something to be a completive, it should be clearly different from an ordinary perfective, which may well imply that the action is completed, but normally does so without extra emphasis on the completion. (Borderline cases exist, for example, the Russian 'terminatives' mentioned in Sect. 3 above, which are regarded as simple perfectives by some scholars.) Completives may have secondary meanings such as suddenness or surprise. They are typically expressed by particles or derivational means, but also by auxiliary constructions (such as *done* in Black English and English-based Creoles).

#### 4.4 Perfectivity/Imperfectivity

The perfectivity/imperfectivity distinction is a central aspectual category in many verb systems, and is the one most frequently expressed by morphological means. In spite of frequent statements to the contrary, there are no clear crosslinguistic generalizations to be made about markedness relations with respect to the perfectivity/imperfectivity distinction, and even within one and the same language there is often confusion here, a fact obviously related to the variety of diachronic sources of the perfectivity/imperfectivity distinction (see Sect. 4.5 below). However, this does not mean that there are no crosslinguistic tendencies in the ways in which the distinction shows up in grammars. It may be illustrative to look at a 'pure' case, that is, a system where perfectivity/imperfectivity

plays the dominating role, without interference of other tense-aspect categories. Such a system can be found in the Cushitic language Rendille. Nonstative verbs in Rendille distinguish two basic forms, one which normally ends in *-a* and one which normally ends in *-e*, as illustrated by the two sentences in (8):

khadaabbe chiirta 'he writes/is writing/wrote/was writing/will write letters' (8)

khadaabbe chiirte 'he wrote letters.' (8b)

The form in (8a), then, is used for reference to the present and future, but also for on-going and habitual actions in the past, and (8b) is basically restricted to single completed actions in the past (with some vacillation for past habitual action). The important generalization is that the distinction 'perfective/imperfective' tends to come out as an opposition between two forms (or sets of forms), one of which is basically restricted to 'past single completed actions.' The addition of further categories to the system usually does not alter this general picture, although it may obscure it more or less. Thus, if there is a marker of past tense in such a system, it is either restricted to the imperfective (like the *imparfait* in French) or added to all forms with past time reference (like the augment in Classical Greek); in both cases, the imperfective/perfective distinction remains basically the same. Complications often arise, however, in subordinate constructions: thus, perfective forms in conditional clauses in many languages may refer to the future, although the same forms in main clauses can only refer to the past.

In a less common type of system than the one described, there is also a distinction between perfective and imperfective in forms with future time reference. This is the case, for instance, in Modern Greek, where the future marker *tha* combines with both perfective and imperfective forms. In the well-known Slavic type of aspectual system found in, for example, Russian, the distinction between imperfective and perfective forms is independent of the past/nonpast opposition, and perfective nonpast forms normally have future time reference. This does not appear to be a common phenomenon crosslinguistically.

There is about as little agreement on the semantic essence of the perfective/imperfective distinction as on the nature of aspect in general. Popular candidates for a basic meaning of perfective aspect include features such as 'totality,' 'completedness,' and 'attainment of inherent limit.' It has been argued (Dahl 1985; Bybee and Dahl 1989) that these features may be relevant to different degrees in different languages and that this may be related to the historical sources and degree of grammaticalization of the categories in question (see below for further discussion).

#### 4.5 Paths of Grammaticalization

As noted in Sect. 4.4, there are a number of ways in which a perfectivity/imperfectivity distinction may

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arise diachronically in languages, and these are also closely linked to the ways this distinction is expressed synchronically. The different sources will be examined in turn.

### 4.5.1 Perfectives from Perfects

This is a well-known diachronic path of development, exemplified in the development by which the perfects (*passé composé*) in several Romance languages have taken over the territory of the old perfective (*passé simple*). More or less well-documented cases of similar developments can be found in other parts of the world, such as the modern Indo-Aryan languages, Hawaiian, and the Kru languages in West Africa. The most conspicuous result of the transition from perfect to perfective is that the form in question starts being used in narrative texts, which is not normally possible with perfects.

In this way, systems with overtly marked perfectives often arise. However, perfects may sometimes be unmarked (in which case they are usually formally nondistinct from statives), and thus a development is possible in which the result is an unmarked perfective form, although it is hard to find well-documented cases of this. A sizable number of the attested cases of perfectives of this kind retain the periphrastic expression of their origin.

### 4.5.2 Imperfectives from Progressives

This is another well-documented and widespread path of development, found for instance in Turkic languages, Armenian, Scots Gaelic, various languages in West Africa and others.

The effect of the transition from progressives to imperfectives is that the forms in question come to be used also in habitual and generic contexts and with stative verbs. From the point of view of the expression, this development gives rise to overtly marked imperfectives. As was noted above, progressives typically have periphrastic expression—this is sometimes retained in the imperfective (e.g., in Eastern Armenian), but there are also examples (e.g., Yoruba) where the transition to imperfective seems to have been connected with a fusion between the marker and the verb.

### 4.5.3 Perfectivity/Imperfectivity by Accidentalization

The term ‘accidentalization’ will be used here to denote the process by which a formerly independent lexical term is integrated into an inflectional paradigm. The motivation for the term is that the process can be described as one by which a property which is inherent of (‘essential to’) a lexeme is reinterpreted as an ‘accidental’ property, that is, becomes restricted to a set of inflectional forms, and thus comes to belong to ‘accidence’ in the traditional interpretation of that term. Cases of accidentalization have been described in traditional historical linguistics, but it has rarely

been studied as a phenomenon per se. Yet, it plays an essential role in the genesis of grammatical aspect, and is highly relevant to the understanding of the aspect/*Aktionsart* continuum.

The inherent semantics of lexemes makes them more or less naturally prone to appear with different temporal and aspectual interpretations. For instance, a verb which in its typical uses denotes a punctual event (such as *die*) is more likely to be used in a context where also perfective aspect as a grammaticalized category shows up. One possible way in which such a state of affairs may be reflected in grammar is in differentiation of markedness relations. Thus, in many tense-aspect systems, zero-marked forms of active verbs acquire a past perfective interpretation, whereas zero-marked stative verbs are interpreted as referring to the moment of speech. Accidentalization, however, requires further developments, which may take a number of different directions, most of which all, however, lead to the integration of previously independent lexemes into an inflectional paradigm.

- (a) Two lexemes may differ with respect to their meaning in such a way that the difference is similar to the content of an inflectional category. Thus, the relation between collective nouns and ‘ordinary’ count nouns is similar to that between plurals and singulars. Pairs of nouns with meanings such as ‘human being’: ‘people,’ ‘bovine animal’: ‘cattle,’ etc., may therefore be reinterpreted as suppletive members of the same paradigm. In the Russian aspectual system, there are a number of suppletive pairs, some of which may plausibly be assumed to have an analogous origin. In the pair *brat’*:*vzjat’* ‘take,’ the members have the etymological meanings ‘carry’ and ‘take up,’ respectively. Similarly, the verbs *govorit’* ‘talk’ and *skazat’* ‘say’ are usually seen as forming an imperfective/perfective pair. In both cases, then, one atelic and one telic verb are reinterpreted as to differ only in grammatical aspect.
- (b) More commonly, perhaps, the association of an inherent semantic feature with a grammatical category leads to the creation of an incomplete paradigm, that is, the lexeme is restricted to a subset of the possible inflectional forms. Thus, the word *people* in English is treated as a plural in virtue of its collective meaning, but there is no natural singular counterpart to it. Similarly, atelic verbs in Russian are normally ‘imperfectiva tantum.’
- (c) Often, the reinterpretation of inherent semantic properties applies to classes of lexemes rather than individual ones. If such a class is also distinguished formally in some way, the formal feature may also be reinterpreted. For instance, reduplicated verbs, with an original iterative or durative interpretation, may be reinterpreted as

the imperfective counterparts of simple verbs and, consequently, reduplication as a process comes to be reinterpreted as a way of marking imperfective aspect. Fully-fledged inflectionalization of reduplication is found, for example, in Tagalog and other languages in the Pacific area; in other languages, such as Latin and Greek, reduplication is found as an idiosyncrasy in individual tense-aspect paradigms. In other cases, derivational suffixes with similar meanings to reduplication may be reinterpreted as markers of imperfective aspect. This is the plausible origin of the imperfectivizing suffixes of the Slavic languages and also many of the present stem formations in Indo-European.

- (d) Also in the case of derivational affixes, incomplete paradigms may arise: the Russian derivational *Aktionsarten* enumerated above all seem to have the property that they belong to one aspect only, and this is usually predictable from their semantics. Thus, semelfactives are—not unexpectedly—always perfective and are regarded by Russian grammarians as having no imperfective counterparts.
- (e) A more complex situation may arise when there are not one but many candidates for reinterpretation. An important case in point is that of bounders. The term ‘bounders’ here refers to morphemes like the verb particles *up*, *down*, etc. in English phrasal verbs such as *eat up*, *burn down*, etc., the original meaning of which is normally spatial and which, by virtue of indicating the endpoint of a movement or—by metaphoric extension—the endstate of a process, entail telicity (boundedness) of the verbal action. The grammatical status of bounders varies from language to language: they may be affixes on verbs, as in Slavic, or particles, as normally in English. Both possibilities may occur in the same language (most Germanic languages; Hungarian).

The first step in the grammaticalization of bounders is that combinations of verbs and bounders (or verbs with boulder affixes) are seen as exclusively perfective. Since there are normally a number of possible bounders with different meanings in a language, this does not by itself entail that a boulder is seen as a marker of perfectivity in the proper sense. However, in a further development, one or more boulder morphemes may lose their lexical meaning and become ‘empty,’ to use the traditional term used about boulder prefixes in Russian. Thus, one obtains ‘paradigms’ such as *fotografirovat’* (imperfective): *sfo-tografirovat’* (perfective) ‘to photograph’ (Russian).

More or less grammaticalized bounders have been reported at least from the following: Slavic and Baltic languages, Hungarian, Georgian, Margi (Chadic), and Mokilese (Micronesian).

One possible result of accidentalization processes of the kind described above is a perfectivity/imperfectivity opposition like the one found in older Indo-European languages such as Classical Greek and Sanskrit. The opposition between perfective forms (basically, the aorist) and imperfective forms (the present and imperfect) is manifested by the choice of both endings and stem alternations. The latter show great lexical idiosyncrasy: for some verbs, the imperfective (present) stem is identical to the root; for others, it is the perfective (aorist) stem. For each of the two stems, here is a considerable number of derived types. This synchronic state reveals a diversity of diachronic origins, where the imperfective stems in general seem to be derived from iteratives, duratives, and the like, while the sources of the perfective stems are more obscure. In Latin, the situation has been further complicated by the merger of the Indo-European perfect with the aorist.

An example of a system with partially rather striking similarities to Indo-European is found in the Penutian language Wikchamni (Gamble 1978). The main aspectual opposition in Wikchamni, which is most probably interpretable as imperfective/perfective, is that between durative and nondurative. The durative forms of a verbal paradigm are typically distinguished from the nondurative ones by the appearance of the verb stem. Even if the choice of stem variant is partly idiosyncratic, durative stems tend to be characterized by (a) lengthening of one of the stem vowels and/or (b) reduplication. The nondurative forms employ stem forms which are either identical to the root or ‘reduced forms’ where the second vowel is deleted, as illustrated by the examples in (8):

root	durative present	aorist	
ʔu-šu-	ʔuša · at	ʔoššu	‘to steal’
p <sup>h</sup> iwiš-	p <sup>h</sup> ewsat	p <sup>h</sup> iwišii	‘to pound’

## 5. Fused and Layered Aspectual Systems

As was seen in the case of the older Indo-European systems, it is possible for there to be more than one origin of perfectivity/imperfectivity paradigms in one and the same language. At least two possible types of system may be distinguished: in one, referred to here as a *fused* aspectual system, there is synchronically only one perfectivity/imperfectivity opposition; in the other, called here a *layered* system, there are two or more distinctions, which are synchronically at least partially separate from each other, and where the ‘layers’ usually differ in the extent to which they are grammaticalized. The application of this distinction is made more difficult by the fact that, in some layered systems, the layers may themselves be fused.

The situation in the Slavic languages provides illustrations of the different possibilities. In early Slavic, as documented for instance in Old Church Slavonic, there was a perfectivity/imperfectivity opposition very much like the Indo-European one described above.



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Verbs thus had forms (traditionally called 'tenses') such as present, aorist, and imperfect. This system, then, was well integrated into the general tense-aspect paradigm: the perfectivity/imperfectivity distinction was basically realized only as the opposition between aorist and imperfect, following the crosslinguistic tendencies for this distinction. However, a new layer had been introduced—the specifically Slavic aspectual distinction between perfective and imperfective verbs. This system may in itself be seen as a fusion of several different sources. To start with, there is a lexical differentiation based on semantics, in that although most simplex verbs are imperfective, a sizable number of high-frequency verbs were perfective, and those all seem to have telic meanings (e.g., *dati* 'give,' *sěsti* 'sit down'). In addition, verbs with semelfactive infixes (*-nq-*) and verbs with boulder prefixes were perfective. From perfective verbs, derived imperfectives were formed by the help of suffixes which were probably originally iterative. Thus, a large number of the verbs formed perfective/imperfective pairs. The new aspectual system was relatively independent of the old tense-aspect system, and even if the aspectual pairs may be seen as quasi-inflectional paradigms, the system remained to a significant extent the lexical character of its origins. In other words, the two perfectivity/imperfectivity layers of Old Church Slavonic arguably display different degrees of grammaticalization.

The members of two binary oppositions may logically be combined in four different ways. In the case of the two Slavic perfective/imperfective oppositions, the following past time reference forms are in principle possible: imperfective imperfect, perfective aorist, perfective imperfect, and imperfective aorist. Of these, the last two exhibit contradictory values for the two oppositions, and, although their text frequency seems to have been rather low, they did occur in Old Church Slavonic, and still do occur in modern Bulgarian, which has essentially preserved both layers of the Old Church Slavonic system. These unexpected combinations are of particular interest, since they shed light on the semantic differences between the two layers. It appears that a characteristic of the semantics of Slavic perfective verbs—that is, of the newer layer of the aspectual system—that distinguishes them from most perfective categories crosslinguistically is that they normally imply the existence of a nontrivial bound or limit to the action. This shows up, for example, in contexts such as answers to a question like 'What did you do yesterday evening?' Thus, in Russian, one natural answer to this might be *My peli* 'We sang,' with the past tense of an imperfective verb. To use a perfective verb, one would either have to add a delimiting object, for example, *My speli pesnju* 'We sang a song,' or add a delimitative prefix *po-* implying that the singing lasted for a limited time: *My popeli* 'We sang for a while.' Most non-Slavic perfective categories do not seem to carry this kind of implica-

tion, and neither does the older layer of the Slavic system. Therefore, it is possible in modern Bulgarian to use a form such as *Pjachme* 'We sang,' that is, an aorist of an imperfective verb, as the translation of Russian *My peli*.

In Bulgarian, as seen above, the two perfective/imperfective distinctions of Slavic have been essentially preserved. In other modern Slavic languages, the two layers of the system have been reduced to one, but in different ways. In the majority of the Slavic languages, the old layer disappeared when the perfect took over the functions of the aorist and imperfect. In the West Slavic language Sorbian (Lusatian), the aorist and imperfect paradigms are still preserved, although the aorist forms occur with perfective verbs and the imperfect forms with imperfective forms only. In view of the fact that each verb has only one set of forms, grammars talk of both paradigms as belonging to a single preterite tense. This is, then, a clear example of the fusion of two earlier layers.

Outside the Slavic area, Georgian displays a layered system which exhibits some similarities to the Slavic layers but which seems to be on its way to fusion. A large number of the Georgian verbs form imperfective/perfective pairs where the perfective members have boulder prefixes (so-called 'preverbs'). In addition, there is an aorist-imperfect inflectional distinction. Again, then, there are four logical possibilities, but the 'contradictory' ones seem to be highly marginal if they are used at all. In addition, the present forms of prefixed verbs are used with future meaning but seemingly without any aspectual restrictions.

It was said above that the Old Slavic tense-aspect system was two-layered with respect to the perfectivity/imperfectivity distinction. It may be claimed, however, that there is yet another layer, constituted by the derivational formations discussed in Sect. 3. This layer, then, would be further away from the grammaticalized end of the aspect: *Aktionsart* continuum. At the same time, it is closely linked up with the imperfective/perfective distinction in verbs, since the verbs of each *Aktionsart* normally belong to one aspect only.

Parallels to this kind of layering are found in the quite complex tense-aspect systems of the Athapaskan languages. In the Athapaskanist tradition, two categories are postulated, usually referred to as 'mode' and 'aspect.' A closer look at these, however, reveals that behind the term 'mode' is an inflectional tense-aspect system of a relatively standard kind, including a perfective/imperfective distinction, with the perfective restricted to past time reference. Aspect, on the other hand, is much more like *Aktionsart* in the sense in which this term is commonly understood in Slavic linguistics, that is, referring to a classification of the lexicon primarily on criteria of derivational structure. As in Slavic, there are ties between the two layers, among other things in that some aspects may occur only with some modes.

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## Aspect: Further Developments

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Since the publication of the first edition of the *Encyclopedia of Language and Linguistics* work on aspect has proceeded apace. This article provides a summary of that work, highlighting the major topics and the major changes in analysis. The latter relate to the different types of situation or lexical aspect, both as a system and as the individual classes related by the system, the concept of bound(ary), the concept of viewpoint aspect proposed by Smith (1991) and the typology of aspect. In spite of the increasing amount of research into languages other than English and Russian, it is still the case that these are the languages most investigated, and this is reflected in the many examples from English and Russian and in the references to work by Russian linguists.

## 1. Lexical Aspects

It has been generally accepted since the 1970s that lexical aspect is fundamental and plays an important role in determining the grammatical aspect of verbs in clauses. Vendler's distinction of states, activities, accomplishments and achievements (see Aspect: Basic Principles) has been at the centre of lexical aspect since the 1970s. His terminology has survived the attempt by Mourelatos (1981) to distinguish between states and occurrences, with occurrences dividing into processes (activities) and events, which in turn split into developments (accomplishments) and punctual occurrences (achievements). In contrast, linguists had already been using the grouping proposed by Mourelatos in which states are seen as opposed to the three other types of situation. (Vendler saw a connection between states and achievements in that both excluded Progressive, but they are very different in meaning and differ in many distributional properties.)

What has not survived is Vendler's focus on verbs to the exclusion of other constituents in clauses. The current view, well-established since Dowty (1979), is that being an activity, accomplishment and so on is a property of the whole clause which may be determined by subject or object noun phrases (the type of noun, whether the noun is singular or plural), the presence or absence of directional phrases, or the choice of adposition, e.g. *to* vs *towards*.

## 1.1 Recent Systems of Lexical Aspect

The concept of lexical aspect has been extended and refined over the past decade. The main thrust has been to develop a system of components underlying Vendler's four separate classes. Dowty proposed a system based on stative predicates and various sentential operators and connectives. States are assigned the structure  $V(x_1, \dots, x_n)$ , where  $V$  is a state predicate and the  $x$ s represent arguments. Activities have that structure plus the operator  $DO$ , introducing agency into the interpretation – agents do or perform actions; accomplishments have the activity structure plus  $CAUSE\ BECOME$ , introducing the final phase of an activity which leads to an entity moving into a new state; activities have the state structure to which is applied simply the operator  $BECOME$ . (For a detailed account of this system see also van Valin and LaPolla (1997).)

Moens (1987) (and Moens and Steedman 1987) introduced an elementary event structure consisting of a preparatory process, a culmination point and a consequent state. On the basis of the properties  $\pm$ state,  $\pm$ extended and  $\pm$ consequent (leading to a consequent state or not) he established five classes of proposition (not verb); State, Process (corresponding



to Vendler's Activity), Culminated Process (corresponding to Vendler's Accomplishment), Point (not corresponding to any of Vendler's classes but not unlike Smith's Semelfactive (see below)), and Culminated Point, corresponding to Vendler's Achievement. This scheme is applied to the interpretation of texts (especially by computer). Moens assumes that particular verbs are assigned to a basic class of proposition but that factors in discourse can compel a verb and a proposition to change their class. For example, the occurrence of Progressive forces Points to become Processes; that is *She coughed* may relate to a situation involving a single cough conceived as happening instantaneously, whereas *She was coughing* relates to a situation in which a series of coughs was produced over a period of time.

Verkuyl (1993) focuses on durative and terminative sentences such as *They ate sandwiches* and *They ate three sandwiches*. He uses a property called [+ADD-TO] to represent dynamicity and a property called [+SQA] (Specific Quantity) to capture duration. [+SQA] has to do with whether the subject or object Noun Phrase is singular or plural and whether the plurality is bounded; in terms of syntax, whether a given plural noun is modified by a determiner (definite article, demonstrative adjective, numeral). The basic idea is that only a [+ADD-TO] verb combined with a [+SQA] noun phrase yields a terminative aspect that is formed compositionally. [+ADD-TO] relates to a more basic distinction between verbs denoting movement and verbs not denoting movement. Movement is analysed as beginning at a Source and ending in a Goal. Source and Goal are linked by a Path, and ADD-TO captures the idea that paths are gradually extended until they reach a Goal. *John is ill* is [-ADD-TO] and [+SQA], which combination entails durativity. *The Fat Boy ate biscuits* is [+ADD-TO] and [-SQA], which also entails durativity. (The concept of path comes from the idea that the Fat Boy works his way through the biscuits.) *The Fat Boy ate two biscuits* is [+ADD-TO] and [+SQA], which entails terminativity. (In Vendler's terms, the situation has a built-in limit. The activity of eating takes place but when the biscuit is finished, the situation has been accomplished and the participants move on to a new situation.) All this is to say that the verb is allocated to an aspectual type, but that inflectional aspect, number, adverbials etc. can affect the type of the predication as a whole.

Smith (1991: 27–33) proposed that three properties be recognized as the basis for the distinction between the different lexical aspects:  $\pm$ stative,  $\pm$ telic, and  $\pm$ durative. (See the hierarchy offered in *Aspectual Type(s)*.) Telicity has to do with the idea that certain types of situation have a built-in boundary and, if left to continue uninterrupted, arrive at a natural conclusion. The boundary may be temporal—*Susan is working for twelve hours today* denotes a situation that comes to an end when twelve hours have passed.

The boundary may be material—*Susan is writing a book* denotes a situation that necessarily comes to an end when the book is completed. Susan may give up before then but that is irrelevant for present purposes. (See the discussion of boundedness below.) Note too the concept of subjects and objects measuring out an event: in *The apple ripened fully in the autumn sun* and *The warm autumn sun ripened the apple fully* the apple measures out the change along the parameter of ripeness. (Tenny 1994.) Duration is to be understood as a property of speakers' mental representations, and not as correlating directly with the length of periods of time. This does not mean that there is no correlation, as demonstrated in Timberlake (1982). (See the discussion of the imperfective below.) States are static with no dynamics and no built-in final boundary. All the other types of situation are dynamic. Activities are non-stative and durative and possess no built-in final boundary—[-stative], [+durative], [-telic]; accomplishments are non-stative and durative, but also telic, consisting of an activity phase followed by a final-boundary phase—[-stative], [+durative], [+telic]; achievements are conceived as having no duration, as occurring instantaneously and as involving a boundary-crossing—[-stative], [-durative], [+telic]. To Vendler's four types Smith adds semelfactives. These are not unlike achievements in being non-stative and conceived as happening instantaneously, but Smith suggests that achievements have a built-in final boundary, e.g. *reach the top*, *win the race*, but that semelfactives, e.g. *knock* and *cough*, do not have such a boundary—[-stative], [-durative], [-telic]. Smith's class of semelfactives fill a gap in her system, for verbs which have negative values for all three features, but the her analysis is not without problems. For instance, Lehmann (this volume) places semelfactives in the set of punctual situations, which are telic. Smith's proposed distinction between semelfactives and achievements may turn out to be tenable only in some weaker form; in Russian grammar a class of semelfactive verbs has traditionally been recognized by virtue of their meaning plus the suffix *-nu*, as in *stuknut'* 'knock'. The same suffix occurs in *dostignut'* 'reach', which is classed as a semelfactive (momental'nyj) verb in Paducheva (1998: 332).

### 1.2 States

The concept of state has been explored in detail. From the work by Bulygina (1982), and Paducheva (1996) has come an extensive range of sub-types of stative verbs: verbs of inherent property such as *xromat'* 'limp', relations between facts and events such as *predshestvovat'* 'precede', verbs denoting relations between objects such as *prinadlezhat'* 'belong', verbs denoting semiotic relations such as *vyrzhat'* 'express', verbs of spatial configuration such as *lezhhat'* 'lie', verbs of perceived states such as *krasnet'* 'blush' and *krasnet'sja* 'show red', verbs of physical states

such as *golodat* 'be starving', verbs of modal states such as *nuzhdat'sja* 'be in need of', verbs of domination such as *gospodstvovat* 'be master', verbs of existence and presence such as *žit* 'live', verbs denoting psychological states such as *bojat'sja* 'be afraid' and mental states such as *somnevat'sja* 'doubt', verbs denoting states of desire such as *xotet* 'want', verbs of intention such as *nadejat'sja* 'hope'. Spencer and Zarsetskaja (1998) provide a lengthy list of stative predicates but point out that detailed study of the morphological, syntactic and semantic properties of these predicates has still to be carried out.

An additional problem is that, because progressives in many languages are built on locative structures (see below), it is possible to analyze them too as states—*Susan is working* can be analyzed as 'Susan is in a state of working'. It is clear that the concept of state and stative verb is in danger of being overextended. The original concept, developed for English by Lakoff (1965, 1970) and applied to Russian by Miller (1970) encompassed a narrow range of predicates denoting psychological and physical states. Even this small group of predicates cannot be straightforwardly analyzed. As pointed out in Miller (1974), some Russian stative predicates have nominalizations that take the preposition *k* 'towards', such as *nenavist' k* 'hatred of', *ljubov' k* 'love for'. These structures suggest that so-called stative situations require a dual analysis; one in terms of an experiencer being in a state and the other in terms of an agent directing an emotion towards an entity.

## 2. Layering

Dahl (this volume) discusses layered aspect systems, focusing on historical change that imposes a new aspect-signalling system on an older system. This happened in Slavic, with the aspect system inherited from Indo-European being replaced by the Slavic aspect system. In Russian the old I-E system vanished but in Bulgarian the two aspect systems coexist, as Dahl shows. The notion of layering, or nesting, is also important from a purely synchronic perspective. Lindstedt (1984) presents analyses of examples such as the Bulgarian in (1).

- Doktor Xaralampi ... igrá (1)  
do kŭšno na karti ... i spa do deset sutrinta  
Doctor Xaralampi play till late  
at cards and slept till ten in the morning

*Igrá* and *spa* consist of imperfective stems but with an aorist (perfective) third person singular suffix *-a*. The aorist suffixes signal that one event, playing at cards, finished, then a second event took place, and finished, and so on. The imperfective stem signals that each event has the internal structure of a process. As Lindstedt puts it, the examples can be thought of as reflecting the application of a perfective operator to an imperfective argument. The application of an

imperfective operator to a perfective argument is exemplified by the Russian sentence in (2).

- On kazhdyj den' pročitjval pis'mo (2)  
He each day read-through the letter

*Pročitjval* contains a perfective prefix *pro*—and an imperfectivizing suffix *-yv*. The prefix *pro* signals that the action of reading affected the letter from beginning to end. The suffix *-yv* signals that the action was habitual. The nesting of aspects is signalled in Bulgarian and Russian by the morphology of the verb but occurs in languages where it is not signalled by the verb morphology. Lindstedt provides the French example in (3).

- Chaque fois Minna faisait attendre (3)  
Christophe quelques minutes  
Each time Minna made to-wait  
Christophe some minutes  
Each time Minna kept Christophe waiting for several minutes

As in the previous Russian example there is an event which is begun and ended, namely Minna keeping Christophe waiting. For a single instance of this event the perfect or past historic would be used, *a fait attendre* or *fit attendre*. *Faisait* is the past imperfective form and is required by the phrase *chaque fois*, which signals that the event was repeated. In Lindstedt's terms an imperfective operator is applied to a perfective argument but the French verb signals only the imperfective operator, the repetition, in its morphology.

## 3. Bounds/Boundaries

The concept of bound or boundary is central to aspect theory but has also been subject to discussion. It is central because the definition of perfective aspect depends on it. A traditional definition of perfective aspect in Slavic linguistics, adopted by Comrie (1976), states that perfective aspect is used to present an action as a completed whole, with no attention paid to whatever internal structure it might have. Dahl (1985) opts for a definition that takes reaching a bound/boundary as crucial. The key argument for Dahl is that this definition allows an explanation of the use of imperfective aspect in Russian for single events that are completed wholes (the 'statement-of-fact'—*konstatatsija fakta*—use). The speaker who uses (4) focuses on the final boundary; the speaker who uses (5) merely states that a particular action took place, leaving the final boundary out of focus. (Examples from Paducheva 1996: 55.)

- Taksi vyzvali? (4)  
Taxi you-called?  
Did you call a taxi (or not)?  
Vy vyzvali taksi (5)  
You called taxi  
Have you called a taxi?

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(4) contains the imperfective verb *vyzyvali* and the speaker merely wants to know if the action took place or not. If it did not, presumably the speaker will walk or take a tram. (5) contains the perfective verb *vyzvali* and is appropriate in a situation where the addressee has been instructed, or has volunteered, to telephone for a taxi. The focus is on the action reaching its final boundary (possibly with the result that the taxi is on its way). An analysis of perfective aspect based on totality does not permit (4) and (5) to be differentiated, but an analysis based on the concept of reaching the final boundary does permit a differentiation.

The concept of boundary is central to the notion of telic predicates, Vendler's accomplishments and achievements. An accomplishment is a situation with a built-in final boundary; *Jane was writing a novel* describes a situation with a built-in boundary in that when the novel is complete Jane moves from writing a novel to some other situation. However, in choosing progressive aspect the speaker ignores the final boundary. (Moens (1987) treats the progressive as forcing an activity interpretation on the basic accomplishment *write a novel*. Smith—see below—treats the situation (lexical) aspect as constant but the viewpoint (grammatical) aspect as differing.) *Jane wrote a novel* presents that final boundary as having been reached. Dahl (1981) questions the distinction between built-in final boundaries that are potentially reachable (which are relevant to lexical aspect) and boundaries that are actually reached (which are relevant to the choice of perfective aspect).

Fortunately for aspect theory Dahl's objections can be answered. He sees the sentence *The submarine moved towards the North Pole* as problematic. It meets one criterion for having a built-in boundary, namely in the normal course of events the boundary will be reached, but it also meets a criterion for not having a built-in boundary, namely it permits adverbs such as *for two days*. The answer is straightforward; *towards* contrasts with *to* and *as far as* and the choice of *towards* indicates that the speaker excludes a final boundary. (The speaker's mental representation of the event is crucial. An activity such as *walking in the park* has a final boundary in the real world since it cannot continue indefinitely. Human beings tire out, need a change of occupation or stop for food and drink. These inevitable final boundaries are not relevant to the distinctions between activities and accomplishments.) *The submarine was moving towards the North Pole* and *The submarine moved towards the North Pole* present the situation as an activity. *The submarine was moving to the North Pole* and *The submarine moved to the North Pole* present a different situation, an accomplishment. Dahl suggests that problems arise with respect to equivalent examples in different languages. For example, *He was building a house* is generally treated as an accomplishment/as telic; when the house is built, the house-building

situation comes to an end and a new situation begins. The German equivalent, says Dahl, is *Er baute an einem Haus*, which is treated as atelic, as an activity. The problem is factitious, arising from an infelicitous cross-language equivalence. The appropriate English equivalent of *Er baute an einem Haus* is *He was working on a house*, which, like the German sentence, must be analyzed as an activity, with no built-in boundary.

Assuming that the distinction can be maintained between built-in potential boundaries and boundaries which are reached and which require the use of perfective aspect, we can ask about the nature of the latter boundaries. A now-classic example from Dahl (1985) is in (6).

Context: What did your brother do after dinner yesterday? (6)

Sentence: He WRITE letters.

The appropriate Russian sentence is *On pisał pis'ma*, with an imperfective verb *pisal*. The equivalent French sentences, depending on whether the text is spoken or written, are *Il a écrit des lettres*, with the Perfect *a écrit*, or *Il écrit des lettres*, with the Past Historic. It is not possible to use the French Imperfect(ive) past, *il écrivait des lettres*. The sentences *Mary danced until midnight* and *Mary danced for two hours* are likewise translated into Russian by means of the imperfective verb *tantsevala*, whereas in the French equivalents the Perfect or the Past Historic would be used but not the Imperfective past. Lindstedt suggests that the relevant boundary which calls forth Perfective aspect in Russian is the material bound (his term). Where there is a built-in boundary, and where that boundary is reached, Perfective aspect is used. If Dahl's example had been *He wrote five letters (and went to bed)* the Russian equivalent would have the Perfective form *napisal*. 'Perfective' aspect in Romance languages is required if a temporal bound is reached—dancing until midnight and dancing for two hours involve a temporal boundary which is reached at midnight or after two hours have passed. As Lindstedt observes, Slavic languages are now recognized as aspectually idiosyncratic and certainly far from typical of languages with imperfective-perfective aspect systems. On the other hand, there is no good reason to take as typical the Romance aspect system either. Rather the concept of bound(ary) is crucial but what type of bound(ary) is recognized varies from language-family to language-family.

Lindstedt's distinction between material and temporal bounds connects with a further distinction drawn by Smith (1995). She distinguishes sentences such as *I walked to school/I walked three miles*, which have a result (being at school, being three miles further on), from sentences such as *I walked for three hours*, which have no result. The first two examples

result in a new state and have an intrinsic bound (equivalent to Lindstedt's material bound), whereas the last example is temporally bounded and has an independent bound. Independent bounds are assigned externally and are signalled by adverbial time phrases such as *till midday*, *three hours*, and so on. She proposes that boundedness be regarded as a feature with three values; unspecified, independently specified, and intrinsic.

#### 4. The Aspect Hierarchy and Viewpoint Aspect

Comrie (1976) offered the following hierarchy, which is difficult to interpret. The major split in (grammatical) aspect was between perfective and imperfective. Progressive, continuous, and habitual seemed to be subtypes of imperfective constructions. This interpretation was far from alluring. How could the English Progressive be a subtype of imperfective construction when it had very different properties from the imperfectives of the Slav languages or the imperfectives of French (the *présent* and the *imparfait*)? These relate to states or to dynamic situations or to one situation presented as on-going or to a situation presented as recurring habitually. In contrast, the English Progressive can only be assigned to verbs denoting dynamic situations (*He is silly* relates to a permanent property of a person whereas *He is being silly* relates to how a person is behaving at a particular time) and typically to a verb referring to a single situation. Was the Russian Imperfective a subtype of Imperfective too? The hierarchy suggested that it was not.

The difficulty was that Comrie appeared to be offering a hierarchy of constructions, and progressive constructions seemed to be a type of Imperfective construction. Dahl (1985) argued powerfully against this analysis and for the view that across languages Progressive constructions had to be recognized as separate from Imperfective constructions. Across languages the Perfective–Imperfective contrast correlates strongly with past vs non-past time reference, whereas Progressive constructions are (almost) independent of time reference. For instance, the English Progressive can take any tense—*Kirsty is/was/will be/has been/will have been/had been surfing the Net*. Progressives seldom express habitual meaning, whereas Imperfectives regularly include habituality. (In fact, the English Progressive can express habituality, as in *I see you're drinking vintage port these days*.) Progressives are normally restricted to dynamic situations whereas Imperfectives are not. Progressives are usually expressed syntactically (periphrastically), whereas Imperfectives are expressed by morphology.

The impasse was resolved by Smith's (1991) notion of viewpoint aspect. Smith adopts the now standard analysis whereby lexical aspect (which she calls situation aspect) is primary. But speakers and writers adopt different viewpoints on a particular situation—*Mary walked to school* vs *Mary was walking*

*to school* (when the thunderstorm broke). Smith distinguishes three viewpoint aspects, perfective, imperfective and neutral, the last of which will not be discussed here. Perfective viewpoints canonically include the endpoints of a situation (Smith 1991: 109); imperfective viewpoints present part of a situation, with no information about its endpoints. Smith further distinguishes between unmarked imperfective viewpoints (as defined above) and marked imperfectives, which focus on the preliminary stages of an event or the result interval of telic events (Smith 1991: 111).

The concept of viewpoint aspect can be applied in different ways. Smith treats Russian imperfective aspect as the Russian correspondent of the imperfective viewpoint and the English progressive as the English one. Habituals, such as *Guy plays tennis every Friday*, are handled as states, and states exclude the Progressive in English. Another possibility is to regard the imperfective viewpoint as simply not including the endpoints of a situation, and to regard a situation as being simple (one situation at one time and place) or complex (recurrences of a situation at different times and places). Languages such as Russian use one construction for both simple and complex situations, and this double function of the imperfective can be explained by simple and complex situations both being able to have duration. Languages such as English have one construction (the Progressive) for simple situations viewed from the imperfective viewpoint and another for complex situations. Of course English has two constructions for complex situations, the simple present (*Guy plays tennis*) and the used-to structure, as in *Guy used to play tennis on Fridays*. The treatment of Habituals as states raises questions about exactly what types of situation can be counted as states, and obscures the traditional and valid view of the Progressive as restricted to dynamic situations.

Whatever the implementation of Smith's theory, Comrie's hierarchy is now interpretable. The topmost occurrence of 'Imperfective' relates to viewpoint; the labels lower in the hierarchy can be taken as relating to constructions.

#### 5. Perfective and Imperfective

Another major controversy had to do with the relationship between Perfective and Imperfective aspect. The traditional view in Slavic linguistics is that Perfective is marked, since it definitely signals that a situation has reached its closing boundary, whereas Imperfective is unmarked, since it leaves it open whether the closing boundary has been reached or not. Dahl (1985) proposed that Perfective and Imperfective be treated as equal in status ('equipollent'); Comrie (1976) put forward the marked/unmarked analysis. The markedness approach is not incorrect; Timberlake (1982) demonstrated that it did not provide an adequate basis for an explanation of the uses



of the Russian Imperfective. The latter comes only from a more complex account involving the concepts of duration (for single situations) and repetition or habituality (for complex situations).

## 6. Sources of Aspect

Knowledge of grammaticalization and the sources of various aspectual constructions has grown enormously over the past decade. Dahl (Aspect: Basic Principles, this volume) mentions the path of development whereby imperfectives develop from progressives. Bybee et al. (1994: 129–33), drawing on their own data and citing Heine et al. (1991), observe that in many languages progressives have their origin in locative structures. (See also Anderson (1973 and Miller (1972) on locative and directional structures as the source of various aspectual structures in a range of languages.) Other sources for progressive structures are verbs corresponding to *go* or *come* plus a non-finite form, a copula plus a non-finite form, reduplication, and equational structures (e.g. *he is an eating one* = *he is eating*). Another familiar route leads from perfects to perfectives. Many perfects in turn derive from resultatives; for instance Perfects in many Indo-European languages have their source in resultative (passive) participle modifying a direct object noun; the standard example in English is *I have the letter written*, which yielded the modern Perfect *I have written the letter*. In other languages Perfects have come from a verb corresponding to *finish* plus a non-finite form. An examination of informal spoken standard English and of non-standard varieties (and even the standard written variety) shows that alongside the newer Perfect the resultative construction is still alive and productive, and English is not unique. This is an excellent example of persistence, the survival of the source construction alongside its offspring.

## 7. Frequency of Constructions Across Languages

Interesting information is accumulating about the frequency of different aspectual constructions across languages. Progressives, Perfects, and marked Imperfectives/Perfectives occur in equal numbers of languages, approximately 38 each. Progressives, for instance, are unevenly distributed. Dahl (1995, 20–1), working with Bybee's GRAMCATS sample of 66 languages, found the highest frequency of Progressives among the South American languages, 77% of which had a Progressive. The percentages for North America, Southern Eurasia, and northern Eurasia were 66, 46, and 44 respectively, with a very low percentage, 33, for the African languages. In contrast, the lowest frequency of Perfects is in the South American languages, 44%, compared with 88% for Northern Eurasia. Only the Northern Eurasian languages in the sample have 'have' Perfects but the African languages display the greatest range of Perfect constructions—'be', 'finish', 'already', a movement construction and

various other types. Marked Perfectives/Imperfectives are most frequent in the African languages, 77%, and the Northern Eurasian languages, 66%.

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## Aspectual Type(s)

C. Lehmann

The entity designated by C. Lehmann a predication is here called 'situation.' In the tradition based on Latin grammar, the word *actio* was used at least since the first half of the nineteenth century in the sense of situation. In 1845, Hermann Schmidt distinguished *actio* as a dynamic situation from *conditio* as a static situation. Since then, the term 'action' has been applied to a dynamic situation or to the designation of a verbal predication. More recent terms for situation in general include *state of affairs*, *process*, *event*, and *eventuality*. Below, *action*, *state*, *process*, and *event* designate specific types of situations.

When the term *Aktionsart* (plural *Aktionsarten*, lit. action type) was introduced by Karl Brugmann in 1885, it was meant to cover the whole area of aspectuality (see Sect. 1.1). *Aktionsart* as a semantic feature of verbs (including durative, iterative, ingressive, and many others) was delimited against aspect as a grammatical category (covering perfective versus imperfective) only in Agrell (1908). In non-German linguistics, the distinction was at first not given much importance, and the term aspect has been used to cover everything that Brugmann had covered by *aktionsart*. The loan *aktionsart* was more often mentioned than used. More recently, aspectual character (Lyons 1977: 706), aspectual class (sometimes abridged to aspectual), and actionality have been introduced as English counterparts to Agrell's *Aktionsart*.

### 1. Situations

#### 1.1 Parameters Structuring Situations

A situation is a cognitive representation which may or may not correspond to some real-world state of affairs. A situation consists of a set of entities called 'participants' which are related to each other by means of an immaterial center, the situation core. The situation core is represented by a predicate,

whose lexical nucleus may belong to any of the major word classes. In what follows, verbs are most important.

Participant relations may concretize in semantic roles. An important parameter along which these may be ordered is the continuum of control versus affectedness of a participant, at whose poles one finds the agent and the patient. The situation has an internal time structure, which determines its dynamicity. Finally, the situation has an external temporal relation to other situations in the universe of discourse, including the speech situation. This is its taxis or perspective.

The functional domain of aspectuality includes the internal time structure of a situation and its taxis. The focus of what follows will be on the internal time structure. Participant relations are relevant insofar as they may restrict the possibilities of internal time structure.

#### 1.2 Time Stability and Dynamicity

The time-stability of a situation (cf. Givon 1984: ch. 3.4; Stassen 1992) is not its absolute duration in time but its volatility, its liability to change. Table 1 shows the dynamicity gamut leading from class membership as the most stable type of situation to the event as the most unstable type. If a binary distinction is needed, situations to the right of states in Table 1 may be considered dynamic, the others static.

To the right hand of durative processes, greater dynamicity is induced by telicity, i.e., by bounding a situation. The left boundary of a situation, its starting point, consists in the change from nonexistence to existence of the situation. Similarly, its right boundary or end point consists in the change from existence to nonexistence of the situation. These changes in themselves have no extension in time. Most states of

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Table 1. Time stability and types of situations.

static ←————→ dynamic				
atelic			telic	
atemporal		durative	termin.	ingress. punctual
class membership	property	state	process	event

affairs in the real world have a start and an end point in this sense. This is certainly true for both of the situations described in (1). Linguistically, however, this feature may be focused upon or may remain out of consideration. Thus, the situation of (1a) is unbounded, whereas the situation of (1b) is bounded at the right, since its coming to an end is focused on in the meaning of the predicate.

- The house will burn. (1a)  
 The house will burn down. (1b)

A situation is called telic (or transformative; from Greek *télos* boundary, end, aim) if it is bounded at the start or at the end. It is atelic if it is open at both sides. A telic predicate is one whose meaning focuses on one or both of the boundaries of a situation. In an alternative terminology, telic equals terminative (see Sect. 2.3.2).

If a language uses verbs to express situation cores at a given position on Table 1, it uses verbs at all the positions to the right of it. The expression of durative situations requires a verbal predicate in all languages. If a language uses nouns to express situation cores at a given position on Table 1, it uses nouns at all the positions to the left of it.

The aspectual character of a predicate is the semantic feature which codes the type of situation according to Table 1 or a subtype thereof. The aspectual character may be a feature of the lexical core of the predicate. In particular, verbal lexemes may be classified by their aspectual character (cf. Daneš 1987; Lehmann 1991).

For dynamic situations, there is a distinction between controlled and uncontrolled situations. It corresponds to one between (control verbs and noncontrol verbs. No control is possible to the left of states (for states themselves, see Sect. 2.2).

## 2. Aspectual Characters

### 2.1 Class Membership and Property

Class membership concerns the essence of an entity. The feature distinguishing class membership from the situation types further to the right in Table 1 consists in its being substantive, the others being only accidental.

Sentences expressing class membership, as (2), have a nominal or copular predicate in many languages. On the other hand, (2a) shows a derived stative verb which exhibits the same grammatical properties as the

basic stative verb in (2b). The latter, in turn, allows for an alternative way of representing class membership:

- wəy də-wəy<sup>ə</sup>-w + p' (2a)  
 D3 ABS.3.SG.HUM-man-STAT.PRES ABKHAZ  
 'he is a man'

(Hewitt 1979: 47)

- wəy r + c'a + y<sup>ə</sup>-s də-q'o-w + p' (2b)  
 D3 teacher-ESS ABS.3.SG.HUM-EXIST-STAT PRES  
 'he is a teacher'

(Hewitt 1979: 46)

A property of an entity is less time-stable than its class membership insofar as it does not concern its substance and may thus change while its class membership is left intact. The primary word class for the representation of properties is the adjective in many languages including English. If an adjective forms the predicate of a clause, a copula is required, as in the translation of (3). There are also a couple of property verbs in English such as *taste*, *smell*, *resemble*. Other languages use stative verbs throughout:

- (barà) bə-pəjò-w + p' (3)  
 you ABS.2.SG.F-pretty-STAT.PRES ABKHAZ  
 'you are pretty'

(Hewitt 1979: 47)

### 2.2 State

States differ from properties by being more temporary, transitory, contingent. A property, but not a state, may characterize an entity. The difference between properties and states may be inherent to certain concepts. Being sick (a state), for instance, is usually conceived as having a beginning and an end, while being red (a property) is normally not. There may also be operations for shifting a concept across this border. Spanish uses two copulas, *ser* and *estar*, with adjectival predicates to express the distinction between situations on the left side of Table 1 up to and including properties and unbounded situations right from there, as in (4):

- Juanita es guapa. 'Juanita is pretty.' (4a)

- Juanita está guapa. 'Juanita is looking pretty.' (4b)

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States differ from more dynamic situations by requiring no input of energy, as nothing changes while they hold. Common stative predicates include *be*, *have*, *belong*, *lack*, *contain*, *know*, *cost*, *be worth*, *weigh*, *consist of*. In English, most stative predicates are

adjectives, such as *sick* and *asleep*. However, there are some stative verbs, even a few transitive ones, among those just enumerated.

In English and several other languages, verbs may be tested for stativity by putting them in the imperfective or progressive aspect. This either results in ungrammaticality (*Mary is knowing the answer*) or restricts the possibilities of interpretation (*Churchill is standing on Trafalgar Square* can only refer to the person, not to his statue).

Some languages have special morphology for stative verbs. In Latin, most intransitive stative verbs belong to the *ē*-conjugation, such as *ualēre* 'be strong,' *liuēre* 'be blue,' *frigēre* 'freeze.' In Abkhaz, there are two grammatical classes of verbs, stative and dynamic verbs, with different conjugation paradigms. The former are defective in many verbal categories: all of them are intransitive, they have no perfect and no contrast between simultaneous and anterior tenses.

An important subclass of stative predicates are positional. Their meanings include body positions such as 'stand,' 'lie,' 'sit,' as well as relative positions of physical objects such as 'hang,' 'lean,' 'hover.' In most languages, they are categorized as verbs. Verbs of body position are called posture verbs. Being stative verbs, they often have a reduced set of verbal categories. Some languages also have basic positional adjectives, like French *debout* 'standing.'

The question of control is particularly intricate in the case of positionals. Tests such as the imperative test (*kneel!*) or the higher control verb test (*she hesitated to kneel*) yield questionable results. On the other hand, the acceptability of *Churchill is standing on Trafalgar square* on the personal reading suggests that animate beings have at least potential control of their positions in the sense that they are free to change them.

Stative predicates may be formed from more dynamic predicates. A resultative predicate (normally an adjective, a participle, or an intransitive verb) is a stative predicate which is derived from a dynamic predicate (typically a terminative verb), designates the state reached after completion of the underlying situation, and predicates this of one of the participants of the underlying predication, usually the patient (see *Resultatives* for details).

The perfect (see *Perfect*) may be used to designate a state if this can be conceived as resulting from some prior process. Table 2 shows some examples from Ancient Greek, where the perfect forms designate states, which may be designated by simple stative adjectives or verbs in other languages (cf. Comrie 1976: 67).

Table 2. Resultative perfect in Ancient Greek

present		perfect	
<i>histēmi</i>	I place myself	<i>hēstēka</i>	I stand
<i>kámnō</i>	I become tired	<i>kékmēka</i>	I am tired

The perfect was already used in this stative function in Proto-Indo-European. Some verbs made their way into the historical languages only with their perfect stem and meaning. They are called praeterito-praesentia, i.e., perfect (lit. past) forms with present meaning. They include such verbs as Ancient Greek *oída* = German *weiß* 'I know' (perfect to PIE present stem \*wid- 'see').

### 2.3 Process

Dynamic situations differ from static ones by requiring continuous input of energy in order to go on. This is because they are internally heterogeneous, i.e., they generally involve some kind of change. A dynamic situation can be said to happen; a static situation is just the case. A dynamic situation which is not bounded at the start is a process. Dancing is a controlled process, growing is not. A controlled process is an action. The term process is sometimes restricted to uncontrolled processes.

#### 2.3.1 Durative

Just like states, processes are temporary, having a starting and an ending point. A predicate which designates a process without focusing on either the beginning or the end is durative (Latin *dūrāre* last) or atelic. Situations less dynamic than processes are also atelic, and similarly the predicates expressing them. However, states are usually not called durative.

Duratives combine freely with duration adverbials such as (*for*) *three seconds/centuries*, whereas more dynamic predicates do not, or only with restrictions. They do not combine with time-limit adverbials such as (*with*) *in three seconds/centuries*. Another test which distinguishes telic from atelic situations is the implication from imperfective aspect to perfect. It may be phrased in the following question: if a participant is engaged in Ving and is interrupted in the course, has he then Ved? If the answer is yes, V is atelic, if it is no, V is telic.

Table 3. Inchoatives in Latin

stative		inchoative	
<i>liuēre</i>	be blue	<i>liuēscere</i>	become blue
<i>ualēre</i>	be strong	<i>ualēscere</i>	grow strong
<i>patēre</i>	be open	<i>patēscere</i>	open (intr.)

The most important operation converting a stative into a durative predicate is the inchoative. In Latin, this is done by means of a suffix *-sc-*, as in Table 3.

The inchoative is, in a certain sense, the mirror-image to the resultative. The term inchoative (Latin *inchoāre* 'begin') appears to refer to the start or the incipient phase of a process. Accordingly, *liuēscere* would mean 'start to be blue.' Instead, it designates the whole process which starts from some other color and ends in blue. Accordingly, its perfect *liuuit* 'became blue' does not mean 'started to be blue,' but 'completed the process of getting blue'; i.e., it has a

## Aspectual Type(s)

terminative reading (cf. also 5a). The inchoative is therefore clearly distinct from the ingressive (cf. Sect. 2.4.1).

Durative predicates may also be derived from more dynamic predicates. However, the boundary inherent in telic situation cores cannot simply be released. Therefore, the way to durativize such a predicate is to have the situation repeat itself. A situation is iterative (Latin *iterāre* 'do again') if it consists of a sequence of instances of a given elementary situation. The notion will normally be relevant only if there is an iterative derivation, like the Latin derivation by a *-itā-* suffix, as in Table 4.

The iterative is one kind of verbal plurality (see *Aspect*). Punctual predicates are often used iteratively without any derivational expression. Typical examples, like *scratch*, *knock*, *box*, designate movements which are commonly repeated in order to produce effect.

### 2.3.2 Terminative

A telic situation which is bounded at the end is terminative. Alternative terms include telic, resultative, and accomplishment (Vendler 1967: ch. 4). Telic is here used in the broader sense explained in Sect. 1.2. The term resultative should be reserved for the meaning explained in Sect. 2.2. A terminative process is one which has an inherent terminal point towards which it proceeds. When it crosses this boundary, it is completed. A durative process can in principle continue indefinitely. It does not change the nature of the process if it is stopped at any point. Consequently, the notion of completion is inapplicable to a durative process. A durative predicate focuses on the process as such, without attention to either of its boundaries. A terminative predicate considers the terminal phase of a process and focuses on its right boundary. A terminative verb derived from an atelic verb *V* may roughly be paraphrased by 'V to completion/the end.'

Table 4. Iterative in Latin

punctual		iterative	
<i>nuere</i>	nod	<i>nūtāre</i>	nod repeatedly
<i>salīre</i>	jump	<i>saltāre</i>	dance
<i>vertere</i>	turn	<i>versāre</i>	turn
	(to other side)		(around and around)

Table 5. Terminative derivation in German

durative		terminative	
<i>jagen</i>	hunt	<i>erjagen</i>	catch after hunting
<i>schlagen</i>	beat	<i>erschlagen</i>	slay
<i>essen</i>	eat	<i>aufessen</i>	eat up

Some languages may productively derive terminative from durative verbs. In Indo-European languages as well as in Hungarian, this is achieved by preverbalization (cf. Sect. 3.1) and prefixation. Table 5 illustrates the German prefix *er-* and the preverb *auf*.

The combination with duration versus time-limit adverbials and the implication from imperfective to perfect (cf. Sect. 2.3.1) are the two most important tests that distinguish terminatives from duratives.

The conditions for completion depend on the nature of the situation and its participants. If one of the participants is a patient, then the process may affect it ever more as it goes on, as with 'burn' and 'eat.' In this case, total affectedness of the patient is equivalent to completion of the process. If a participant is effected or gradually worked off, as with 'write' and 'sing,' then completeness of the product implies completion of the process. If the process is one of motion or transport and a participant specifies a distance, a goal, or a reference point, then the situation becomes terminative if the distance is covered, the goal reached, or the reference point crossed. Consequently, *Paul wandered* is durative, but *Paul wandered three kilometers/to Loch Ness/across the mountain* is terminative. Referentiality of such participants is another condition for terminativity (cf. Dowty 1972).

Derivation of a transitive from an intransitive verb by promotion to direct object, with total affectedness of the latter, often involves terminativization of the verb. Thus German has *steigen (auf)* (intr., dur.) 'climb (on)'—*ersteigen* (tr., term.) 'climb on,' *kämpfen (für)* (intr., dur.) 'fight (for)'—*erkämpfen* (tr., term.) 'achieve by fight.'

The shoes blackened. (5a)

John blackened the shoes. (5b)

Some expressions are ambiguous as to terminativity. In (5) both situations are processes. Both may be either terminative or nonterminative. Both may be modified by both of the adverbials *for three hours* (nonterminative) and *in three hours* (terminative). This correlates, again, with partial versus total affectedness of the patient.

A language may have durative verbs without having specifically terminative verbs, but not vice versa. English is a case in point. A terminative meaning may always be expressed by syntactic means.

Many derivational prefixes that terminativize a verb have their origin in local preverbs (see Sect. 3.1). For instance, for the Latin preverbs, as in *dūcere* 'lead'—*ēdūcere* 'lead out,' terminativity of the compound verb is a side-effect of the specification of the spatial region of the reference point (for the development by which such local preverbs first acquire a terminativizing and finally a perfectivizing function, see *Aspect*).

Table 6. Ingressive in Russian

durative		ingressive	
<i>govorit'</i>	speak	<i>zagovorit'</i>	start to speak
<i>kričat'</i>	cry	<i>zakričat'</i>	start to cry
<i>pet'</i>	sing	<i>zapet'</i>	start to sing



## 2.4 Event

A situation which is bounded at the start is an event. A controlled event is an act. Kicking is an act, falling is not. An event may or may not be bounded at the end.

### 2.4.1 Ingressive

A situation which is bounded at the start is called ingressive (Latin *ingredi* 'step in'). Alternative terms include inceptive and inchoative; see Sect. 2.3.1 for the latter. An ingressive situation consists in crossing the boundary from absence to presence of the process. An ingressive verb derived from an atelic verb V may roughly be paraphrased by 'start to V.' However, the implication from imperfective to perfect is invalid for ingressives. This shows that they designate not the incipient phase of a process, but rather the phase preceding (the start of) a process. English only has lexical contrasts such as stative *know* versus ingressive *realize*. Russian may form ingressive verbs by the preverb *za*, as illustrated in Table 6.

### 2.4.2 Punctual

A situation which is bounded both at the start and at the end is punctual; achievement (Vendler 1967; ch. 4) is an alternative term. With respect to telicity, there are two alternative conceptions of a punctual situation. On the momentary view, it is bilateral telic. This implies that start and end of the situation are distinct and that there is a moment between them. On the transgressive view, start and end of the punctual situation coincide. It consists in the transition from a situation preceding it to a situation following it and thus has no extension in time. For instance, the punctual situation of arriving, on the transgressive view consists in the transition from approaching to being there, while on the momentary view it is the moment between the transition from approaching to arriving and the transition from arriving to being there. With different predicates in different contexts, one or the other view is activated.

On either view, a punctual situation has no phases. A punctual verb may be combined with a phase verb (e.g., *begin to cough*); but this forces a nonactual (habitual or iterative) interpretation of the predicate. By this criterion, punctual predicates may be distinguished from others.

A situation is semelfactive (Latin *semel* 'once') if a process that is typically durative or iterative only occurs in one instance, as in *pull* versus *jerk*. It is, thus, a subtype of punctual situations. The notion will normally be relevant only if there is a semelfactive derivation converting durative into punctual predicates, as by the Russian suffix *-nu* seen in Table 7.

Table 7. Semelfactive in Russian

base		semelfactive	
<i>kolot'</i>	chop	<i>kol'nut'</i>	cleave
<i>pugat'</i>	frighten	<i>pugnut'</i>	give a scare
<i>blestet'</i>	sparkle	<i>blesnut'</i>	flash

Table 8. Semelfactive in Portuguese

base		semelfactive	
<i>gargalhar</i>	laugh loudly	<i>dar uma gargalhada</i>	give a loud laugh
<i>olhar</i>	look	<i>dar uma olhada</i>	throw a glance
<i>gemer</i>	sigh	<i>dar um gemido</i>	heave a sigh

In English and German, semelfactives may be formed by the particle (preverb) *up* = *auf*, as in *flicker up* = *aufflackern*. A periphrastic construction used in Ibero-Romance is illustrated in Table 8. The verb is nominalized, the noun gets an indefinite article (signifying one instance), and this noun phrase functions as the direct object of the verb *-dar* 'give'. The indefinite NP may as well be in the plural; e.g., *dar pulos* 'perform jumps.' This construction is thus essentially a means of individuating instances, including, as the limiting case, one instance, of a process.

Predicates such as *burst*, *reach*, *find* have egressive (Latin *egredi* 'step out') aspectual character. Egressivity is sometimes equated with terminativity. However, a terminative process reaches a built-in end by some kind of consumption, while an egressive situation consists in a catastrophe after a preparatory process which it may presuppose (in this case, *swell*, *reach out*/*strive*, and *search*) but which does not necessarily reach such an end. Egressive situations are a subtype of punctual situations.

## 2.5 Other Aspectual Characters

Every predicate, basic or derived, has one of the aspectual characters contained in Table 1. Some derivations, however, focus on some quantitative property of a situation and produce a member of one of the above types only as a side-effect. Among them are the following:

The repetitive derivation indicates that the process designated by the base occurs once again. English and Spanish use the prefix *re-*, as in *replay*, *rewrite*, *readaptar* 'readapt,' *reutilizar* 'use again.' There appears to be no relationship between the repetitive and the iterative.

The reversive derivation indicates that the process designated by the base is reversed or its effect undone. English uses the prefixes *un-* and *dis-*, as in *uncover*, *unravel*; *disarm*, *disengage*.

An intensive verb is a deverbal verb which specifies enhanced intensity of the respective situation. Only dynamic verbs, above all control verbs, qualify as bases. Table 9 shows some examples from Latin. Here the same suffix *-tā* is used which we have already seen in the iterative derivation (Table 4). Actually, iterative and intensive are not always clearly distinct. Thus, *clāmitāre* and *rogitāre* may easily be given an iterative interpretation, without an essential difference in meaning.



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The opposite of the intensive is the attenuative (or diminutive) derivation. An attenuative verb derived from some verb *V* may be paraphrased by ‘*V* lightly/a little.’ German derives such verbs by a suffix *-el* which triggers umlaut in the root, as seen in Table 10. The attenuative lowers the affectedness of a patient and may correspondingly render a transitive base verb intransitive and a terminative base verb durative. This is the case with German *deuten* ‘interpret’—*deuteln* ‘make unsystematic attempts at an interpretation, quibble.’

Table 9. Intensive verbs in Latin

base		intensive	
<i>clāmāre</i>	cry	<i>clāmitāre</i>	yell
<i>terrēre</i>	frighten	<i>territāre</i>	frighten to death
<i>rogāre</i>	ask	<i>rogitāre</i>	press

Table 10. Attenuative verbs in German

base		attenuative	
<i>lachen</i>	laugh	<i>lächeln</i>	smile
<i>husten</i>	cough	<i>hüsteln</i>	cough slightly
<i>sausen</i>	roar	<i>säuseln</i>	rustle

### 3. Aspectual Character and Related Concepts

#### 3.1 Expression of Aspectual Meanings

Aspectual meanings may be expressed in different ways (cf. Bybee 1985: ch. 2.1):

- In a periphrastic construction, the aspectual character is couched in an auxiliary (or function) verb which takes a nonfinite or nominalized form of the basic verb as its complement, for example, Port *dar um pulo* ‘leap once.’
- In inflectional morphology, the aspectual meaning can be expressed in two ways. First, it may be the meaning of an inflectional morpheme, as in the Russian perfective *po-stroit’* ‘PERF-build.’ Second, it may be the conditioning factor for an allomorphic variation in some other inflectional category, especially tense, aspect, or mood, for example, Abkhaz -past *s-ce-yr’* (ABS.I.SG-go-PAST.DYN) ‘I went’ versus *s-q’a-n* (ABS.I.SG-be-PAST.STAT) ‘I was’ (Hewitt 1979: 201–03).
- In derivational morphology, the aspectual character is expressed by a morpheme attached to the base and forming a derived lexeme with it, for example, Latin terminative *consequi* ‘attain.’
- In a monomorphemic lexeme the aspectual character is included in the set of semantic features constituting the lexeme’s meaning, for example, English terminative *complete*.

In the fourth case, the aspectual meaning has no expression of its own and not even, as in case (bB), a reflection in expression. Expression strategies (a) and (b) may be classified as grammatical, strategie (c) and (d) as lexical. On the other hand, strategies (a) and (c) are at the initial pole of two continua. The

grammaticalization continuum leads from there to expression strategy (b); the lexicalization continuum leads to (d).

Many Indo-European languages, including Slavic, Latin, and some Germanic languages, have a special derivational process called preverbalization. A preverb is a morpheme, generally an adverb or a preposition, which is preposed to a verbal stem and thus forms a compound verb stem. It differs from a prefix in that it may be a word. Examples include Latin *in* ‘in,’ *e(x)* ‘out,’ *dē* ‘down,’ *per* ‘through,’ *con-* ‘together,’ *rē-* ‘back.’ The basic meaning of most preverbs is local. The compound verb designates a situation which penetrates into a certain spatial region of a participant. It thus crosses a boundary. This is why compound verbs of this kind are usually telic.

#### 3.2 Aspectual Character and Aktionsart

An *aktionsart* is an aspectual character which has an expression of its own. Aspectual characters which lack this have been called verbal characters. In languages such as English, Japanese, Mandarin Chinese, and Samoan, where aspectual characters are not marked morphologically, verbal lexemes may be polysemous or even completely neutral as to aspectual character. The methodological consequence of this is that tests for aspectual character do not nearly yield as clear results for verbal characters as they do for *aktionsarten*.

Languages with an extensive paradigm of preverbs, such as the Slavic and other Indo-European languages, often use them to make finer distinctions of situation types than have been mentioned here (see *Aspect* for some of the additional *aktionsarten* to be found in the literature).

#### 3.3 Aspectual Character and Aspect

As explained in Sect. 1.2, the aspectual character of a situation is its type according to the time-stability scale of Table or a subtype thereof. Differences in aspectual character constitute different situations. Aspect, on the other hand, treats a situation as bounded or nonbounded with respect to other situations in the universe-of-discourse, so that syntagmatic relations of simultaneity, incidence, and sequence can be established among them. Thus, alternative aspects do not constitute different situations, but only change the situation’s potential in taxis.

To the extent that aspect and *aktionsart* are functionally similar, they may partly compensate for each other. Thus, we find languages with a rich system of aspectual characters and a poor aspect system (e.g., German), with a rich aspect system and little distinction of aspectual characters at the lexical level (e.g., Samoan), and an interplay of both categories (e.g., Modern Greek; cf. Sasse 1991).

The meaning of a clause may be assumed to be a layered operator-operand structure, where at each

level the types of operands and operators are well-defined, and the application of an operator to an operand produces an entity of the next higher level, which may in turn serve as an operand, and so forth. In such a model, aspectual character is a semantic property of a predication. It may be an inherent feature of a predicate or may be an operator (or a feature hidden in some other constituent of the predication) combined with it. The meaning of aspect, together with tense and some other categories, is a semantic property of the next higher level, the proposition. It may be applied as an operator to a predication. This model accounts for the following kinds of evidence:

- (a) The aspectual character of a predication restricts the choice of aspects.
- (b) The restrictions on the choice of aspect are not sensitive to the exact locus (lexical, morphological, syntactic) of the aspectual character inside the predication.
- (c) Aspectual character is an absolute property of a situation, while aspect is a relational property that puts the situation in relationships of taxis with situations in the context.
- (d) Therefore, the scope of aspect includes (the scope of) aspectual character; aspect is a more outward operator than aspectual character. If aspectual character and aspect are manifested in verbal morphology, then *aktionsart* is usually expressed by inner, aspect by relatively outer affixes. The typical—although not definitory—correlation is: *aktionsart* is expressed by derivational, aspect is expressed by inflectional morphology. This also means that there is a grammaticalization path leading from *aktionsart* to aspect (see *Aspect*).

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## Auxiliaries

S. Steele

'Auxiliary' is a term applied most commonly in either descriptive or analytical studies to forms bearing both morphological and positional resemblance to verbs and occurring with a 'main verb' but not independently (except perhaps in environments where a verb has apparently been elided). For example, English verbs are inflected for past tense; the auxiliaries *have*,

*be*, and *do* are inflected for past tense as well, albeit in an idiosyncratic fashion, and English modals have been analyzed by some to be similarly inflected.

- |            |                         |              |     |
|------------|-------------------------|--------------|-----|
| (a) Modals | (b) <i>be, have, do</i> | (c) Verbs    | (1) |
| will/would | is/was                  | fight/fought |     |
| may/might  | has/had                 | die/died     |     |
|            | does/did                |              |     |

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Further, in English simple declarative sentences with a single auxiliary and a verb, the auxiliary appears where the verb would, were the auxiliary absent. The verb accompanying the auxiliary appears either as a participle or in an uninflected form, depending on whether the auxiliary is *have* (e.g., *have shown*) or *be* (e.g., *is showing*) or a modal (e.g., *will show*) or *do* (e.g., *do show*). The first part of this article introduces the properties of English auxiliaries and the second is devoted to their analytical options.

Phenomena at least superficially similar to English auxiliaries are easy enough to find in other European languages, whether they are Indo-European or not. In Finnish, for example, *oli* in (2a) is inflected for '3sg declarative past' while the verb appears as a past participle.

- (a) Liisa oli nukkunut (2)  
 Lisa **auxiliary** sleep.participle  
 'Lisa has slept'  
 (b) Liisa nukkui  
 Lisa sleep.past  
 'Lisa slept.'

But the picture is considerably complicated by the fact that application of the term 'auxiliary' has not been limited to such forms. The term is sometimes applied to a form like *kapala* in the Warlpiri example in (3).

- kurdujarrarlu kapala maliki wajilipinyi witajarrarlu (3)  
 child.dual.ergative **auxiliary** dog.absolutive  
 chase.non.past small.dual.ergative  
 'The two small children are chasing the dog.'

or to a verb affix like *mani* in the Classical Nahuatl example in (4):

- pozonti-mani-z (4)  
 boil-**auxiliary**-future  
 'it will be boiling'

or to a verbal particle like *ye sa* in Ulithian in (5):

- ye sa mese (5)  
**auxiliary** die  
 'He died.'

although each of these diverges from the rough characterization of the English and Finnish forms in at least one respect. *kapala* is a particle complex which occurs in sentential second position, thereby lacking both positional and morphological resemblance to the verb. Because Classical Nahuatl *mani* is a verb suffix preceding a temporal suffix *-z* 'future' in (4) it arguably is like a verb in terms of position and morphology, but in (4) it is also part of a word with the verb. And *ye sa* is both independent and adjacent to a verb, but it doesn't inflect like a verb, because it (or at least *sa* 'perfective') is itself the inflection. The third part of this article, building on the analytical options available to English, introduces a comprehensive classification of auxiliaries.

It is an open question whether the possibilities included in this analytical range can be subsumed under a single categorial identification. Therefore, 'auxiliary' is best thought of as a label of convenience, not as a technical term. That is, although the two are sometimes used interchangeably, auxiliary is not an alternative form of 'Aux,' a technical term for a syntactic category, albeit one whose analysis has been the subject of considerable debate. The fourth part of this article tracks the controversy that once surrounded this category and the demise of both.

### 1. English Auxiliaries

(This section follows closely Appendix A of Steele, et al., authored by R. T. Oehrle.)

English auxiliaries are a subset of a relatively small collection of *aux-elements* involved in a particularly salient set of operations. The *aux-elements* (some of which occur in some dialects only) are: *not*, *can*, *can't*, *could*, *couldn't*, *shall*, *shan't*, *should*, *shouldn't*, *will*, *won't*, *would*, *wouldn't*, *may*, *mayn't*, *might*, *mightn't*, *must*, *mustn't*, *ought (to)*, *oughtn't*, *better*, *be*, *been*, the tensed forms of *be* (= *am*, *is*, *isn't*, *ain't*, *are*, *aren't*, *was*, *wasn't*, *were*, *weren't*), *have*, the tensed forms of *have* (= *have*, *haven't*, *has*, *hasn't*, *had*, *hadn't*), the tensed forms of *do* (= *do*, *don't*, *does*, *doesn't*, *did*, *didn't*), *need*, *needn't*, *dare*, *used to*, and the inflectional feature *tense*. The operations are: negation, inversion (e.g., *Am I thirsty!* or *Never has he worked so hard*), contraction (e.g., *I'll* or *you'd*), agreement (e.g., *am* versus *is*), emphasis, certain kinds of ellipsis (e.g., *Kim should cry and Sandy should too*), VP-fronting (e.g., *She said Kim should apply for the job, and apply for the job Kim should*), tag questions (e.g., *Kim shouldn't cry, should she?*) and specification of sentence type (i.e., distinctions among declarative, interrogative, imperative).

While all members of what is commonly taken to be the class of English verbs occur in good sentences of the following form:

$$3\text{sgPro } v + \left\{ \begin{array}{l} -s \\ -z \\ -iz \end{array} \right\} X \quad (6)$$

(where *3sgPro* stands for any one of *he*, *she*, or *it* and *X* is a variable)

no member of the *aux-elements* does. That is, the 3sg present tense form of verbs is entirely regular. But when an *aux-element* manifests agreement with the subject it is always in a different fashion—e.g., *has* ≠ *have* + *z*, *is* ≠ *be* + *z*, *does* ≠ *do* + *z*—and modals never agree. This is an absolute distinction between verbs and *aux-elements*. Further, every member of the class of verbs, as characterized by (6), may occur in an infinitival construction, i.e., *X* to *v* *Y*, where *X* and *Y* are variables.

Among the set of *aux-elements*, there is a subset (all

of the above except for *not*, *better*, *be*, *been*, (untensed) *have*, *used to*, and tense, i.e., the finite auxiliaries—all of the modals, *do*, and the tensed forms of *be* and *have*) for which there are good sentences the following two forms:

3sgPro a X (e.g., *she can sing*) (7a)

a 3sgPro Y (e.g., *can she sing*) (7b)

Further, no finite auxiliary can be negated to its left. (cf. *Kim might not have been singing*, *Kim might have not been singing*, *Kim might have been not singing*, \**Kim not might have been singing*.)

## 2. Analytical Options

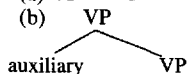
Most late twentieth century analyses of English finite auxiliaries share one property: In all cases the auxiliary is (at least potentially) in combination with a phrase, rather than a word or a stem. Otherwise, however, the analyses are of four different types, exhausting the logical possibilities offered for combination in a structure as in (8), i.e., combinations with VP, with V, with NP, and with NP,VP.

[NP [V ... ]vp] (8)

### 2.1 The Logical Possibilities

One option is to analyze the auxiliary as combining with a V(erb) P(hrase), i.e., a verb and all of its non-subject arguments, where the result of the combination is also a VP, a mapping represented in (9a) and an analysis represented by the local tree in (9b).

(a) VP → VP (9)



For example, on this option, the English string *should give a girl a book* would be analyzed as:

[should [give a girl a book]<sub>VP</sub>]<sub>VP</sub> (10)

The second analytical option is to allow an auxiliary to combine with a verb and all of its non-subject arguments, as exemplified by *give a girl a book*, or the verb plus a subset of these arguments, including the null set.

$V_{valence^n} \mapsto V_{valence^n}$   
where  $n \geq 1$  (11)

Assuming that the valence (i.e., the argument requirements) of a verb includes the subject, this is a conception of an auxiliary as an element that combines with a verb whose valence is unsatisfied, i.e., any of the bracketed units in (12).

[[ $V_{valence^n}$  – argument] $_{valence^n}$  ... – argument] $_{valence^1}$  (12)

so, the modal in a VP like *should give a girl a book* could have the analysis in (10) or either of those in (13).

(a) [[ $[\text{should} [\text{give}]_{valence^3}$  a girl] $_{valence^2}$  a book] $_{valence^1}$ ] (13)

(b) [[ $[\text{should} [\text{give}]_{valence^3}$  a girl] $_{valence^2}$  a book] $_{valence^1}$ ] (13)

A third alternative is the idea that a finite auxiliary may combine with a subject noun phrase to yield a subject noun phrase.

Subject → Subject (14)

So, the modal in *Kim should give a girl a book* will be analyzed as:

[[Kim]<sub>subject</sub> should]<sub>subject</sub> (15)

The last alternative is the idea that the finite auxiliary combines with a verb and all its arguments (including the subject), as, for example, in (16), exemplified in (17),

[subject[v, all required non-subject arguments]<sub>VP</sub>]<sub>X</sub> (16)  
→ [auxiliary X]<sub>Y</sub>

**should:** [Kim [give a girl a book]] (17)  
→ [should [Kim give a girl a book]]

### 2.2 Instantiations

All of these have been proposed, focusing on different properties of finite auxiliaries and expanding in various ways beyond this set, but only the first (VP → VP), the third (subject → subject), and the fourth ([NP, VP] → [auxiliary [NP, VP]]) have been recently elaborated in any detail.

The first, in its incarnation in Generalized Phrase Structure Grammar, is intended to emphasize the similarities between the modals, *have*, *be*, and *do*, on the one hand, and verbs on the other, where the similarities are (1) all of these can be finite (in fact, modals must be finite) and (2) the relationship between modals, *have*, *be*, or *do* and the string which occurs to their right in uninverted sentences is the same as that between a subset of verbs, as e.g., *try* or *want*, and the string which occurs to their right—i.e., both take a VP-complement. Required is an enriched notion of syntactic category, so that it is possible to ensure the appropriate VP-complement type. So, *should* takes a VP-complement headed by an uninflected verb—or a category which is [V: +, BAR: 2, VFORM: Base]; *have* takes a VP complement headed by a past participle—or a category which is [V: +, BAR: 2, VFORM: PastParticiple]; and *try* takes a VP-complement headed by an infinitive—or [V: +, BAR: 2, VFORM: Infinitive]. These subcategorization facts, coded in phrase structure rules, ensure the correct sequences of auxiliaries, as in e.g., *should have given a girl a book*. The syntactic differences between auxiliaries and verbs—i.e., the invertibility of finite auxiliaries but not verbs and the differences in their position relative to negation—are handled by introducing a feature AUX (for which modals, *have*, *be*, *do*, and a few other forms are specified +, while verbs are specified—) and by calling on this feature, as

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well as others, like INV(erted) and NEG, which may have positive specifications only if the feature AUX does.

On the subject-to-subject option offered in Schmerling 1983, a subject is a function from a verb phrase to a clause. Part of the operation of combining a simple (i.e., unmodified by an auxiliary) subject and a verb phrase is the application of tense to the initial member of the verb phrase. In contrast, finite auxiliaries, including modals, *do*, and some instances of *be* and *have*, as well as collocations of Modal + *have*, Modal or *do* + negative, and expressions like *would rather*, combine with a subject to yield a modified subject, one which is either inverted (e.g., *should Kim* or *would Kim rather*) or uninverted (e.g., *Kim should* or *Kim would rather*). An inverted subject is a function from a verb phrase to an inverted clause and an uninverted subject is a function from a verb phrase to an uninverted clause. So, the modal in the sentence *Kim should give a girl a book* is analyzed as in (18a) and the modal in the sentence *Should Kim give a girl a book* is analyzed as in (18b).

- (a)  $[[[Kim]_{\text{subject}} \text{ should}]_{\text{modifiedsubject}} [\text{give a girl a book}]]_{\text{uninvertedclause}}$
- (b)  $[[\text{Should } [Kim]_{\text{subject}}]_{\text{modifiedsubject}} [\text{give a girl a book}]]_{\text{invertedclause}}$  (18)

On this analysis, the morphological differences between auxiliaries and verbs noted in Sect. 1 are unsurprising; the tense operation doesn't apply to modifiers of subjects. Also this analysis captures the fact that there are a number of situations where the subject and an auxiliary appear without the VP—for example, tag questions (*Kim shouldn't give a girl a book, should she?*) and VP ellipsis (*Kim should give a girl a book, and Sandy should too* or *Should Kim give a girl a book? No, she shouldn't.*)—a structural combination which on the first analytical choice is not obviously predicted.

There are two different realizations of the fourth analytical option, differing in the characterization of the members of this mapping. One alternative (proposed by Oehrle in Steele, et al. 1981) is that modals, finite *do*, and tense combine with a 'propositional radical,' i.e., an incomplete proposition in the sense that a proposition is responsible to fact and a propositional radical is not. The result of the combination is a proposition. Thus, the central idea here is that the addition of 'finiteness' to a propositional radical maps it into a proposition, thereby making it responsible to fact.

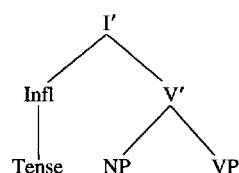
- (a) tense:  $\text{subj } V \dots \mapsto \text{subj } V_{\text{tensed}} \dots$  (19)  
(where  $V_{\text{tensed}}$  agrees with subj in person and number)
- (b) *do*:  $\text{subj } V \dots \mapsto \{\text{DOES, subj } V \dots\}$   
(where DOES agrees with subj, and  $V \neq \text{be}$ )
- (c) modal:  $\text{subj } V \dots \mapsto \{\text{modal, subj } V \dots\}$

For example, the English modal *should* maps the propositional radical *Kim give a girl a book* into a proposition.

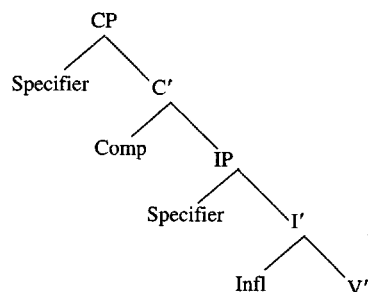
$$[\text{should } [Kim [\text{give a girl a book}]]_{\text{propositionalradical}}]_{\text{proposition}} \quad (20)$$

A proposition becomes a sentence through a mapping that positions the auxiliary either to the left of the propositional radical (to yield, e.g., *should Kim give a girl a book*) or after the subject (to yield, e.g., *Kim should give a girl a book*) and adds a sentential intonation contour.

Another implementation of this analytical option (found in some version in most government binding analyses) is represented in the phrase structure tree in (21).



The idea is that tense (actually a feature +/−tense) combines with V' (a category that dominates both the subject NP and the VP) and the result is I', an 'inflectional phrase.' Modals are also generated in Infl, but, apparently, only in conjunction with +Tense. This conception of auxiliaries is driven, in part, by a desire for structural regularity. The structural resemblance among C(omp)P(hrase), I(nfl)P(hrase), and VP (on the one hand) and among C(omp)', I(nfl)', and V' (on the other), represented in the phrase structure tree below, is highly valued.



Both instances of this analytical type extend the forms involved in the mapping beyond auxiliaries to tense; both also choose only a subset of finite auxiliaries. English modals and *do* alone are involved in the mapping from propositional radical to proposition; *have* and *be* are part of the propositional radical. Similarly, English modals are part of the inflectional phrase, while *have* and *be* are generated in V'; the status of *do* on this analysis is unclear.



### 2.3 Auxiliaries and Verbs

Each analytical option implicitly answers a question that has driven many discussions of auxiliaries: Are these a subset of the category Verb or are they to be assigned to a distinct category? On the VP-to-VP analysis, the differences between auxiliaries and verbs are associated with a feature distinction (+/-AUX), while both are analyzed as sharing the major category feature +V. For both the subject-to-subject analysis and the two instances of mapping from NP-VP, the auxiliaries argued to participate in the mapping are clearly distinct from verbs: No verb combines with the subject to yield a (modified) subject, or with a propositional radical to yield a proposition, or with a V' to yield an inflectional phrase.

### 3. Analytical Extension

Abstracting away from the particulars of the English analyses to the effect of the auxiliary in each analytical option provides a broad, perhaps a comprehensive, view of the linguistic phenomena subsumed by *auxiliary*. It is necessary to conceive of a verb as a valence-bearing unit, i.e., as something which specifies, at least, the number of arguments required, and to allow, but not require, that one argument may be sanctioned by a property other than the verb's valence. Given this, there appear to be four auxiliary types:

- (a) Option 1: generalizing from VP  $\mapsto$  VP,  
valence-inducing auxiliary
- (b) Option 2: generalizing from V<sup>n</sup>  $\mapsto$  V<sup>n</sup>, where  $n \geq 1$ ,  
valence-transparent auxiliary
- (c) Option 3: generalizing from subject  $\mapsto$  subject,  
valence-bearing auxiliary
- (d) Option 4: generalizing from  
[NP, VP]<sub>x</sub>  $\mapsto$  [auxiliary, X],  
valence-external auxiliary

The second analytical option identifies an auxiliary which is transparent to the valence of a verb. The interpretation of this offered in Sect. 2 is syntactic and applies to a verb and any argument other than a subject, i.e.,  $n \geq 1$ . The required modification of this interpretation expands the possibilities to word-internal forms which are valence transparent and lifts the valence limitation (although the grammar of a language might set the lower bound of  $n$  as greater than 0.) That is, in the most general terms, the valence transparent auxiliary type is defined as in (23).

$$V_{\text{valence}^n} \mapsto V_{\text{valence}^n} \quad (23)$$

where  $n \geq 0$ , and V includes Vstem.

A verb internal instance of this auxiliary type is well-attested. The Classical Nahuatl suffix in (4), because it occurs internal to the tense suffix, is an example—under the assumption that the tense suffix makes the stem a word. *hazime* in the Japanese verb in (24), but not the causative *sase*, illustrates as well the stem

internal character of this type, again under the assumption that the tense suffix makes the stem a word.

- tabe-sase-hazime-ta  
eat-cause-begin-tense  
'began to make (X) eat' (24)

A verb external instance has been proposed for Finnish. In Finnish declarative sentences the subject and the object can occur in any order relative to one another and to the verb and the auxiliary. The Finnish sentence *Liisa oli nukkunut* in (2a) has an alternative *Oli Liisa nukkunut*. In either case, on the analysis in (25), the auxiliary *oli* combines with a V, but in the first, the V is a verb lacking its subject, while in the alternative, the V is a combination of a verb and its subject.

- (a) [oli<sub>auxiliary</sub> [nukkunut]<sub>v</sub>] (25)  
(b) [oli<sub>auxiliary</sub> [liisa [nukkunut]<sub>v</sub>]<sub>v</sub>]

Finnish allows, like English, a sequence of auxiliaries.

- Liisa ei ole nukkunut (26)  
Liisa not.past have.participle sleep.participle  
'Lisa has not slept.'

The sequence of auxiliaries must precede the main verb in a certain order, but they need not be contiguous either to it or to one another.

- (a) Ei Liisa ole nukkunut (27)  
not.past Lisa have.participle sleep.participle  
'Lisa has not slept.'  
(b) Ei ole Liisa nukkunut  
not.past have.participle Lisa sleep.participle  
'Lisa has not slept.'

The analysis of each auxiliary as in (23) is consistent with these facts.

The examples from Classical Nahuatl, Japanese, and Finnish are illustrative of the semantic core of the valence-transparent auxiliary type, regardless of its instantiation: aspectual notions are dominant. This type is not limited to this semantic domain, as the Finnish negative auxiliary suggests, but aspect is the semantic center. The position of the valence-transparent auxiliary type is determined by the verb with which it combines. This is obvious in the affixal instance; and, as noted above, the Finnish auxiliaries must precede the verb.

At the other extreme is the valence-external auxiliary. The most straightforward example of its phrasal instantiation is an auxiliary which combines with a fully saturated verb. That is, whether the verb's valence involves all the arguments including the subject or all arguments but the subject, the verb and all of the arguments, including the subject, are present in the unit with which this auxiliary type combines. This analysis has been proposed for Luiseño, where a second position clitic sequence (*po* in (28)) combines

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with its set-theoretic complement (*nawitmal hengeemali* 'arin in (28)).

- nawitmal po hengeemali 'arin (28)  
girl auxiliary boy.object will.kick  
'The girl will kick the boy.'

Differentiating the Luiseño analysis from the English proposals in Sect. 2 is the character of the auxiliary/complement combination. In neither of the English analyses subsumed under option 4 is the result a 'final' category; an inflectional phrase is included within a comp phrase and a proposition can be mapped into a sentence. The valence-external auxiliary is presumed, as in Luiseño, to yield a 'final' category; in Luiseño the auxiliary combines with a proposition—that is, a fully saturated unit which is also responsible to fact—and yields a sentence.

- [V and all arguments]<sub>proposition</sub> → S (29)

The semantic core of this type is modality. The Luiseño second position clitic sequence marks the speaker's commitment to the propositional information. In addition to the simple declaration of fact in (28), there is, for example, the quotative in (30a) and the inference in (30b).

- (a) noo kunun takwayaq (30)  
I **quotative.auxiliary** is.sick  
'I'm sick, so I'm told.'  
(b) wunaal 'il takwayaq  
he **inference.auxiliary** is.sick  
'He's sick, it appears.'

A morphological instantiation of the valence-external auxiliary type is possible. This would be an affix which has no effect on the verb's argument requirements, and which is also the 'final' affix, i.e., the affix which makes the verb stem a word.

- $V_{stem} \mapsto V_{word}$  (31)

The examples from Classical Nahuatl (in (4)) and Japanese (in (24)) are reasonable illustrations of (31), if attention is directed now to the final suffix in the sequence. The central semantic notion for this auxiliary type is suggested as well by these examples: It marks tense. However, tense is not found exclusively in the valence-external auxiliary type, as is shown shortly.

The position of the valence-external auxiliary type, including both (29) and (31), is best characterized as edge-determined. The affixal instance is on the left-most or right-most edge of the word; the sentential instance is at the left or right edge of the sentence, including the possibility, as in Luiseño, of being in sentential second position.

Option one (i.e., the valence-inducing auxiliary) in its English interpretation has to do with the form in which the subject may appear: A finite verb phrase requires an overt nominative subject. More generally,

an auxiliary which is 'valence-inducing' is one which doesn't affect the number of arguments a verb may accept, but rather affects the form in which they may occur. For example, in a number of languages (Serrano, Cupeño, Cahuilla, and Finnish, for example) is a phenomenon termed the 'nominative object.' With a tensed verb, the object occurs in the accusative; with an imperative verb (and sometimes with other inflectional types), the object must be nominative. Compare the two Cahuilla sentences in (32).

- (a) Pa'li pemteew-we (32)  
water.accusative they.look-present  
'They are looking at the water.'  
(b) Pal teew-am  
water.nominative look-imperative  
'Look at the water!'

The tense (and imperative) affixes which determine the properties of the object in these languages are valence-inducing auxiliaries. If a valence-inducing auxiliary affects the form available to the subject (or a single VP external argument), it is reasonable to analyze it as a mapping from VP to VP, but it is essential to distinguish between the two VPs. The VP that the auxiliary combines with lacks a subject, but the form that the subject may take is undetermined; in the resulting VP the subject form is no longer an open parameter.

- $VP_{[subject]} \mapsto VP_{[subject = xform]}$  (33)

If a valence-inducing auxiliary affects the form available to other than a single VP-external argument, as is reasonably taken to be the case in the 'nominative object' languages, the auxiliary is better analyzed as a mapping from V to V. As before, the two Vs must be differentiated. The V that the auxiliary combines with will have a valence set with the required number of arguments specified, but the character at least one of them left undetermined; in the resulting V the character of this argument is fixed.

- $V_{arg^1.arg^2...} \mapsto V_{[arg^1.arg^2 = nom...]}$  (34)

The semantic core of the valence-inducing auxiliary type, like the morphological valence-external type in (31), is tense, although, as the nominative object languages suggest, imperative is also a possibility. Note that the morphological instance of the valence-inducing type will also be a 'final' suffix; so the valence-external and valence-inducing auxiliaries share a number of properties, but never the property which crucially identifies the latter in (33) and (34). The position of a valence-inducing auxiliary could be sensitive to the verb or to an edge. Distinguishing the two turns on further examination of instances of (33), an auxiliary type which appears to be relatively uncommon.

Option three—auxiliary as valence-bearing unit—can also be conceived more broadly than the English

proposal in Sect. 2. While English modals might be part of a unit satisfying a subject requirement only, other instances of this type can include, in addition, elements meeting other of the valence requirements. The Warlpiri second position sequence, illustrated in (3), involves in addition to number and person information about the subject—and in addition to tense—number and person information for up to two more arguments; *kapala*, for example, identifies a 3dual subject and a 3sg object. There is reasonable agreement that the Warlpiri auxiliary does, in fact, satisfy the argument requirements of the verb—i.e., it is a valence-bearing form—although the manner in which it does so is in dispute. One piece of evidence is the fact that a Warlpiri sentence containing only the auxiliary *kapala* and the verb *wajilipinyi* from (3) is a good sentence meaning ‘They (two) are chasing it.’ Satisfying an argument requirement is to be distinguished from agreeing with that argument.

It is important to note that not every instance of a bound form marking person and number is included within this auxiliary type; to be an auxiliary, the form must satisfy the subject (or single external argument) valence. For example, if the object is marked by a prefix to the verb and the subject is marked by a bound form elsewhere (say, in sentential second position), the latter but not the former may be an instance of this auxiliary type. Also, not every instance of a sequence which satisfies, at least, the subject valence is an auxiliary; the valence-bearing unit must do more than meet the valence of the verb. For example, a non-modified English subject is not an auxiliary, but a subject modified by the addition of a modal is an auxiliary. An unmodified subject simply satisfies a valence requirement; a modified subject supplies modality as well.

The notational types that may occur in a valence-bearing auxiliary are modality (as in English), tense (as in Warlpiri), and aspect. The pair of ‘O’odham sentences in (35) illustrates this last possibility.

- (a) ‘A:ñi ‘an s-ba:bigi ñeok (35)  
**I auxiliary.1sg.imperfective** slowly speaking  
 ‘I am speaking slowly’  
 (b) ‘A:ñi ‘ant s-ba:bigi ñeo  
**I auxiliary.1sg.perfective** slowly spoke  
 ‘I spoke slowly.’

The position of valence-bearing auxiliaries is edge-determined; they occur on either the right or the left edge of their combining unit. This may yield what appears be a second position auxiliary.

The term *auxiliary* is reasonably construed as subsuming each of these four analytical options, each of which has more than one instantiation. It is unlikely, however, that all of these are profitably treated as different manifestations of a single higher order linguistic primitive.

#### 4. The Category AUX

In *Syntactic Structures* (1957), Chomsky proposed an analysis of English that included the following phrase structure rules:

$$\begin{aligned} \text{Aux} &\rightarrow \text{Tense (Modal)} (\text{have} + \text{en}) (\text{be} + \text{ing}) (\text{be} + \text{en}) \\ \text{Verb} &\rightarrow \text{Aux} + \text{V} \end{aligned} \quad (36)$$

The fundamental features of this analysis are: (1) a syntactic category Aux is proposed, distinct from the category V (or any other category); and (2) the relative distribution of the auxiliary elements is directly specified in the phrase structure rule. Assuming a rule, termed ‘affix-hopping,’

$$\text{AF} + \text{v} \rightarrow \text{v} + \text{AF\#} \quad (37)$$

which moves the affixes Tense, *en*, and *ing* to the right of an immediately following element (where *v* stands for any modal or V or *have* or *be*), operations of negation, inversion, etc. could be stated as transformations sensitive to the first element in the Aux category—i.e., either Tense or Tense + Modal, Tense + *have*, or Tense + *be*.

For approximately 25 years after this analysis was first set forth in the 1950s, it provoked controversy. Many accepted the existence of the category Aux but disagreed with certain aspects of the original analysis; as shown in Sect. 2 there is still no general consensus on the analysis of these elements. Another aspect of the controversy had to do with the introduction of the category *Aux* itself. Some saw this as an unwarranted extension of the inventory of categories available to human language. On the one hand, there was an a priori bias toward restricting the categorial possibilities regardless of the fate of this particular category. On the other hand, the properties of the English elements included with the category were not seen as sufficiently categorial.

In 1979 an attempt was made (in Akmajian, et al.) to move the argument beyond the analysis of English and to directly confront the issue of the categorial inventory available to natural human languages. The idea was that other languages also offer a category bearing certain resemblances to the English Aux, a category that could not be assimilated to V. Steele, et al. 1981 continued the cross-linguistic investigation by arguing for the equivalence as members of Aux of certain elements in Colloquial Egyptian Arabic, Lummi (a Salish language of Washington State), and Japanese—as well as English and Luiseño.

The analysis of English auxiliaries continues to excite (albeit somewhat subdued) interest, but the category Aux itself is no longer a subject of dispute—not because the essential issues were resolved, but rather because of two independent yet almost simultaneous developments: the analysis of the syntactic category Aux as the feature AUX and the introduction of a new syntactic category INFL.

In 1982, Gazdar, et al. introduced an analysis of

English auxiliaries which held to the line that there is no syntactic node labeled Aux and which embedded this analysis in a theory of phrase structure termed 'Generalized Phrase Structure Grammar.' By analyzing category labels as non-atomic units comprised of a bundle of feature/value pairs, introducing certain restrictions on the distribution of feature/value pairs, and proposing a device (a *metarule*) which maps rules into rules, they argued that it is possible to accommodate the properties of English auxiliaries and the operations associated with them, while treating them as a subset of English verbs and eliminating transformations. The outlines of this analysis were presented in Sect. 2.1.

In 1981, Chomsky introduced a revised syntactic theory, termed 'Government and Binding Theory.' His analysis of English within this theory includes neither a category Aux nor a phrase structure rule introducing the English auxiliary elements. Rather a new label *INFL* is introduced whose composition 'may in principle be the collection of features  $[[\pm \text{Tense}], (\text{AGR})]$ .' (Chomsky 1981: 52). It would appear from the fact that *INFL* dominates a tense feature, from the following proposed phrase structure rule:

$S \rightarrow \text{NP INFL VP}$  (38)

and from the presumption of something like affix-hopping ('In surface structure, *INFL* may appear phonetically as part of a verbal affix system ...'), that *INFL* is simply a reincarnation or a descendent of Aux. In fact, although this presumption was widely held, there is reason to think that it was incorrect. First, *INFL* plays a significantly different role in the structure of a sentence than did the Aux. With the *AGR* feature, *INFL* mediates the relationship between the subject and the verb. All argument positions must be assigned case; the verb cannot assign case to the subject, but *INFL* can. Second, *INFL* has no obvious connection to

the properties that motivated the original analysis of Aux. The operations mentioned in Sect. I relative to the aux-elements are essentially ignored in government-binding theory. Related to this is the fact that the controversy over the constituency of the original Aux has never touched *INFL* nor have any questions about the appropriateness of introducing a new categorial label. Beginning with Pollock 1989, *INFL* also began to disappear, replaced by Tense and *AGR* (both *AGR*<sub>subject</sub> and *AGR*<sub>object</sub>) as separate syntactic constituents. As with the rise of *INFL*, however, the guiding idea behind this development is tied less to the analytical necessities of an individual language than it is to the conceptual necessities of the theory within which it is embedded.

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## Binding

### I. Crookston

'Binding' is a term which may equally be applied to a phenomenon and the component of syntactic theory intended to deal with it. Binding as a phenomenon is the behavior of reflexive and reciprocal pronouns (e.g., *ourselves*, *each other*) on the one hand and personal pronouns (e.g., *we*, *us*) on the other. In this context, reflexive and reciprocal pronouns are usually termed 'anaphors' and personal pronouns simply 'pronouns.' The aspect of their behavior which is of central interest is the restrictions on the grammatical

'distance' between these items and their antecedents, such as the fact that an anaphor must have an antecedent within its own clause (roughly speaking).

#### 1. Preliminaries

An 'antecedent' of an anaphor or pronoun is an expression which refers to the same language-external entity as the anaphor or pronoun: the anaphor or pronoun are said to 'corefer.' Coreference (see *Coreference*) is signaled by 'coindexing,' that is, by the



same subscript 'index' on the expressions which co-refer; for example, (1):

John<sub>i</sub> said that he<sub>i</sub> had hurt himself<sub>i</sub> (1a)

John<sub>i</sub> said that he<sub>j</sub> had hurt himself<sub>j</sub> (1b)

Example (1a) represents the interpretation of the sentence where *John*, *he*, *himself* all refer to the same person, while (1b) represents that where *he*, *himself* refer to a different person from *John*. It is obvious that an anaphor or pronoun must agree in person, number, and gender with its antecedent (2):

\*John<sub>i</sub> said that she<sub>i</sub> had hurt ourselves<sub>i</sub> (2)

is not possible if interpreted with the coreference indicated.

In most cases, an anaphor must have an antecedent which 'c-commands' it. For example, (3):

[<sub>IP</sub> [<sub>NP</sub> He]<sub>i</sub> had hurt himself<sub>i</sub>] (3a)

\*[<sub>PP</sub> Near [<sub>NP</sub> John]<sub>j</sub>] himself<sub>i</sub> saw a snake (3b)

The first branching node above [<sub>NP</sub> *he*] in (3a) is IP, which dominates *himself*; *himself* is c-commanded by the antecedent \* [<sub>NP</sub> *he*]. In (3b) the first branching node above [<sub>NP</sub> *John*] is PP, which does not dominate *himself*: the antecedent of *himself* does not c-command *himself* and the sentence is ill-formed. An expression which has a c-commanding antecedent is said to be 'bound' by it; one which does not is said to be 'free.'

## 2. Binding in English

The three 'binding principles' usually accepted for English are:

- (a) An anaphor must be bound within its binding domain D (i.e., bound by an expression dominated by the node D).
- (b) A pronoun must be free within its binding domain D.
- (c) Any other noun phrase must be free.

The first (a) incorporates a claim that all anaphors including *each other* as well as the reflexives behave alike, which is true with few exceptions. Second, (a) claims that all anaphors must be bound, which explains the ill-formedness of (4a) while leaving exceptions of the type (4b):

\*Ourselves left (4a)

That note to herself was a reminder of the jobs for tomorrow (4b)

Binding principle (b) allows a pronoun to be completely free, as in *He left*. Finally, (c) says that a 'full' NP such as *John* or *the new secretary* must never be bound, no matter how distant the antecedent:

\*He<sub>i</sub> said that John<sub>i</sub> felt that Bill<sub>i</sub> was the best candidate (5)

The binding principles (a) and (b) taken together incorporate a claim that anaphors are in complemen-

tary distribution with pronouns, since D is defined alike for both (see below). In any position where an anaphor is possible bound by an expression X, a pronoun bound by X will be impossible, and vice versa. For example (6):

John<sub>i</sub> hurt himself<sub>i</sub> (6a)

\*John<sub>i</sub> hurt him<sub>i</sub> (6b)

John<sub>i</sub> said that Mary<sub>j</sub> hurt him<sub>i</sub> (6c)

\*John<sub>i</sub> said that Mary<sub>j</sub> hurt himself<sub>i</sub> (6d)

This complementary distribution claim also has few exceptions.

The precise import of the three binding principles (a-c) is of course determined by the definition of the binding domain D. A slightly simplified definition of D for English anaphors and pronouns is (d):

- (d) The binding domain D for an expression X is the smallest constituent containing X and
  - (i) a governor of X; and
  - (ii) a subject other than X.

Provision (d(i)) gives rise to the alternative term 'governing category' for 'binding domain.' Taking examples like (6) first, in (6a, b) D is the main clause, the smallest constituent containing *him(self)* and a subject. In (6b, c) D is the subordinate clause *Mary hurt him(self)*, the smallest unit containing *him(self)* and a subject, *Mary*. The reader is invited to confirm that the three binding principles (a-c) hold good given these decisions on D.

The following contrast:

John<sub>i</sub> believes [<sub>IP</sub> himself<sub>i</sub> to have won] (7a)

\*John<sub>i</sub> believes (that) [<sub>IP</sub> himself<sub>i</sub> won] (7b)

is accounted for by assuming that all finite clauses contain an empty category AGR, which contains a copy of the person and number features of the subject: in the English present tense, where there is observable subject-verb agreement, AGR is a staging-post for the transmission of these features to the verb. Thus (7b) is (8):

\*John<sub>i</sub> believes (that) [<sub>IP</sub> himself<sub>i</sub> [<sub>AGR</sub> 3rd, sing] [<sub>VP</sub> won]] (8)

AGR contains noun-derived features and is held to count as a subject for (d(ii)). Thus D is the subordinate clause in (7b). In (7a) the subject for (d(ii)) is *John* and D is the main clause.

Finally, consider (9):

Mary<sub>i</sub> read [<sub>NP</sub> the note to herself<sub>i</sub>] (9a)

\*Mary<sub>i</sub> read [<sub>NP</sub> John's note to herself<sub>i</sub>] (9b)

Example (9a) is straightforward in the terms discussed so far. Example (9b) is handled if the genitive *John's* is assumed to be a subject for (d(ii)): then [*John's note to herself*] is the binding domain. In general, an NP including a genitive is a binding domain while one without is not.



## Case

## 3. Extensions

Binding domains have been investigated for different anaphors in many languages (Friedin 1992: chapter 7; Harbert 1995). Competence in binding theory has been investigated in little children (Goodluck 1991, pp. 82–6; Cook and Newson 1996, pp. 303–10), in language-disordered children (Bishop 1997, pp. 141–48), and in aphasics (Caplan 1992, pp. 293–5).

The most prominent development in binding theory itself has been the suggestion of a movement element (Harbert 1995). For example, (7b) above might be accounted for by attributing to it a Logical Form (LF) representation in which the anaphor has moved:

John himself<sub>i</sub> thinks that [<sub>IP</sub> t<sub>i</sub> won] (10)

and deploying restrictions on movement operations in general to rule out the construction. Thus the

more complex elements of the definition of binding domains such as D above might be reduced to general restrictions on movement operations.

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## Case

J. M. Anderson

Case is most generally understood as a category of inflectional morphology—indeed, in the Greco-Roman tradition, as the morphological (or secondary) category par excellence, particularly as concerns nouns. Thus, in an example like the Latin (1):

Dominus necavit amicum (1)  
(The) master killed (his/the/a) friend

the word form *dominus* is said to express, among other things (such as gender and number—see *Gender and Gender Systems*; *Number and Number Systems*), the nominative member of the category of case, and *amicum* the accusative. The name for the category is an anglicization of Latin *casus*, which is in turn a translation of Greek *ptōsis* ‘fall.’ The origin of the name is uncertain; one well-known view (that of Sittig) is that it is based on the fall of dice, but a variety of other interpretations is offered by the Stoics, for example. Choice of case is usually said to reflect the function of the noun (or noun phrase) in the more inclusive structure to which it belongs: in (1), for instance, it would be said to reflect the status of *dominus* and *amicum* as subject and (direct) object, respectively.

Case traditionally represents the fundamental dimension in terms of which the forms of nouns (including true nouns, or ‘substantives,’ and other case-marked classes, such as adjectives) may be classified,

or ‘declined,’ given their *ptōseis* (for a concise traditional, but independent view, see, for example, Entwistle 1953: 189–98; also, with more late twentieth-century terms of reference, Lyons 1968: § 7.4.1). This organization underlies the traditional declensional paradigms whereby the expression of the morphological categories appropriate to the noun or adjective is displayed, as illustrated by that for the Old English strong adjective given in (2):

Old English strong adjective: god ‘good’ (2)

	Masculine		Feminine		Neuter	
Nominative	god	gode	god	goda	god	god
Accusative	godne	gode	gode	goda	god	god
Genitive	godes	godra	godre	godra	godes	godra
Dative	godum	godum	godre	godum	godum	godum
	Singular	Plural	Singular	Plural	Singular	Plural

(Old English adjectives are declined ‘strong’ or ‘weak’ according to the syntactic context.) The paradigm for the Old English strong adjective declension displays three categorial dimensions (gender, case, number) and how they are expressed: here, by affixation, specifically suffixation, and involving cumulation (a single affix signals simultaneously values for the three different categories) and with much syncretism (e.g., the expression of dative is the same in masculine and neuter, singular, and plural, and in the feminine plural).

Prior to the Stoics, the term '*ptōsis*' was used for morphological variations in general; with them it came to designate that morphological category which (in their view) distinguished nouns, i.e., it played a central role in distinguishing the primary grammatical categories, or word classes (cf. on the Stoics, for example, Steinthal 1863: 265–90). As such, there has been subsequently more agreement on how to define case negatively than positively: it is not gender, number, tense, etc. There has perhaps been some consensus, however, that a case form expresses a (nonconcordial) relation (or the absence of one) between the noun and some other element. The proviso 'nonconcordial' is intended to exclude relations established purely by agreement of morphological features. For the Stoics 'noun' included 'substantive' ('noun' in the modern sense) and 'adjective,' largely on the basis of their shared morphology in Greek; but most late twentieth-century work regards the case-marking of adjectives as (for the most part) secondary, as a result of concord or a consequence of an adjective having nominal function. It is generally agreed too that case is typically expressed by suffixation to a noun stem of a single morpheme (or absence thereof), though segmentation of case-marked forms is often debatable (see further Sect. 3). But the nature of the relations expressed (in particular, whether semantic or syntactic) has remained controversial, as has (largely as a consequence) the membership of the category (see Sect. 2).

### 1. Traditional Theory, Traditional Problems

The dominant theory of the function or content of case, since it was first formulated in the mid-nineteenth century by Rumpel (1845, 1866), proposes that at least some cases are syntactic, and reflect grammatical relations (such as subject, (direct) object). Thus, the use of *dominus* in (1) could be said, as noted above, to manifest the primary function of the Latin nominative, to mark the subject of the sentence. Other grammarians of the time recognized that some uses (at least) of some cases could not be reduced to the syntactic. So, the Latin ablative in (3):

- Roma profectus sum  
from-Rome I set out (3)

introduces the spatial source of the movement denoted by the verb. This recognition led to the prevalently drawn distinction between grammatical cases and local cases (Lyons 1968: § 7.4.5), the latter term involving the recognition that even 'abstract' uses of such cases were interpretable in spatial terms. A similar distinction—in terms of 'direct' versus 'oblique' cases, but without commitment to the implications of 'local'—has been drawn by S. R. Anderson (1985: § 2.1.2). The Stoics, however, distinguished between the nominative and the other cases of Greek

as *orthē* 'upright' versus *plagiai* 'oblique': the nominative was independent of the verb, *hē onomastikē*, the basic form of the noun; the others showed different kinds of dependence on the verb. Apparently excluded from the category is the 'vocative,' the case of address, presumably for functional reasons, since in terms of expression it patterns along with the (other) cases, and frequently syncrizes with the nominative. Its status as remained controversial. These and other questions of definition and dimensionality, or subclassification, of the cases are pursued in Sects. 2 and 3.

At least since the time of Bernhardt (1805), it has been recognized that some of the same notions as are expressed by cases may also be signaled by prepositions or postpositions, both within languages and on comparison of different languages. More extensive case systems, such as that of Tabassarian (with, according to Hjelmlev (1935/37: 138–59), 48 cases—or 52, including complex cases and purely adjectival—see Sect. 3), largely overlap in their significations with the system of semantic oppositions appropriate to the prepositional system of a language like English, with an impoverished repertoire of cases. It should be noted, indeed, that the drawing of a consistent dividing line between case and postposition depends on the availability of a general definition of the word as a unit. In many languages, too, adpositions and cases cooccur: if, for example, a common noun is substituted for the name in (2), then the source is expressed by preposition plus ablative, as in *ab urbe* 'from (the) city + ABL.' Grammatical relations (at least) may also be expressed by position as well as or instead of by case.

And case-like distinctions may also be marked by verb morphology; the case of a noun may be indicated by the character of the affixes on the verb which are in agreement with it. The simplest situation is where the presence of agreement correlates with the trigger for agreement being a nominative, as in Latin and many other languages. But in other languages various arguments may be coindexed on the verb, and their 'case' indicated thereby. This is illustrated by the Ojibwa examples in (4) (Anderson 1985: 195):

- nwa:bma:g (4a)  
I saw them

- nwa:bmigo:g (4b)  
They saw me

Both verb forms contain the prefix *ne-* 'first person' and the suffix *-ag* 'third person plural' attached to the stem *wa:bam* 'see (something animate)'; the relations of arguments to predicate are signaled by *a:* suffixed to the stem in (4a) (the so-called 'direct orientation') versus *ego* in (4b) (the so-called 'inverse orientation'). Notice finally, though not exhaustively,

that what might be regarded as derivational formations (notably denominal adverbs) also signal case-like notions: hence the debate over the status of the Greek *casus adverbialis* (Hjelmslev 1935: 4).

All of this raises the question of the functional interaction of case with other aspects of the grammar. And it emphasizes the varying functional load carried by case systems, and the varying functions that may be assigned to individual cases; and comes back to the problem of defining case, and of defining individual cases. On what grounds can an accusative in language A, for instance, be identified with an accusative in language B?

## 2. The Nature of Case

Hjelmslev (1935: 45–61) mounts a forceful attack on the traditional theory of syntactic cases. One major objection, which he also makes (1935: 1–32) with respect to the Greco-Latin tradition (and the Sanskrit; 1935: 33–5) rests on the failure to provide a general definition of case. This means that the definitions of individual cases are atomistic and language-particular: they are ‘idiosynchronic’ definitions. This problem dogged the attempts of Latin grammarians to provide an account of the Latin case system on the model of the Greek, given the discrepancy in the number of cases appropriate to the two languages, as it did the attempts of later grammarians to interpret other languages in the light of the Latin system. Witness the famous controversy between, particularly, Deutschbein (1917: particularly ch. 16) and Sonnenschein (1916, especially part 2: § 158–90), on the one hand, and Sweet (1898: § 1985–2010) and Jespersen (1924: ch. 8), on the other, over the cases of English, with the former attributing to the language nominative, vocative, accusative, dative, and genitive, for the most part not formally distinct. A general perspective could be maintained only by taking one system as basic—variously, over time, Greek, Latin, reconstructed Indo-European.

A more particular objection involves the observation that, with the exception of the nominative, none of the Latin cases, for instance, is exclusively syntactic or local; and this is typical (cf. again Anderson 1985: § 2.1.2) who rejects the label ‘syntactic’ for this reason). The accusative, as well as, say, marking the direct object in (5a), also signals concrete spatial goal in (5b):

Julius matrem amat (5a)  
Julius loves (his/the) mother + ACC

Julius Romam iit (5b)  
Julius went to-Rome + ACC

for example. That this does not seem to be fortuitous—a similar scission recurs in other languages—remains unexplained, unless similar dimensions structure the syntactic and local uses, such that accusative

has some consistent value thereon. In terms of the spatial definitions associated with the localist tradition (see below) that Hjelmslev espouses, this value might be that of goal, concrete or abstract, of a movement or of an action. But then, given such a perspective, the individual cases would be defined and classified otherwise than in terms of syntactic versus local, which distinction does not establish distinct sets of cases, except perhaps nominative (syntactic) versus the rest (neutral) (cf. the Stoic classification).

As regards the notion of syntactic case itself, Hjelmslev objects that the definition of nominative as the case of the subject, for instance, is—apart from the fact that the nominative also marks predicatives in (for instance) Greek—either circular (the subject is marked by the nominative) or invokes a concept, that of subject, identifiable only in terms that are linguistically a prioristic, derived from (Aristotelian or Kantian) logic. It is thus clearly for Hjelmslev ironic that Rumpel should have been extolled for evicting from the theory of case, in favor of purely syntactic definitions, extralinguistic concepts such as those invoked by the localists. Hjelmslev also accuses Rumpel of misrepresenting the localist position as attempting to explain the uses of all the cases on the basis of the representation of concrete space: the spatial concepts (notably direction) deployed by the localists are ontologically based (notional), but, it is claimed, linguistically motivated and equally applicable to abstract and concrete uses.

Much of Hjelmslev’s (two part) monograph (1935/37) is devoted to defending and extending the localist theory of case. This he traces back to the Byzantine grammarians, who, however, had little influence on the development of the mainstream European tradition. The formulations with which Rumpel and other ‘antilocalists’ were concerned were those associated with developments initiated by Bopp and his associates, of whom Hjelmslev singles out Wüllner (1827) as having established ‘une théorie des cas fort bien fondée et d’une très grande importance’ (Hjelmslev 1935: 36). Wüllner argues for a cognitively based account; he attributes to both prepositions and case the function of expressing spatial relations which can be applied by the speaker to domains abstract as well as concrete. For him the Greek genitive is the case of departure (source), the accusative that of arrival (goal), the dative that of resting-point; the category of case is organized in terms of the dimension of direction. And he goes on to account for cases in other languages in terms of these and combinations thereof.

However, Wüllner excludes from his account not merely the vocative but also the nominative, as had the Byzantines. And this gap furnished a central argument in the ‘antilocalist’ attack. Hjelmslev (1935/37) is thus much concerned to remedy this lacuna, which he sees as not entailed by the localist

point of view (1935/37: 43). Basing himself on proposals of Wüllner's, he distinguishes different types of neutrality between 'rapprochement' ('towards') and 'éloignement' ('away from'): if a locative case is typically neutral between these in involving neither, a nominative is neutral in being associated with either. Thus, the Latin nominative *rosa* in (6):

Rosa est pulchra  
(The) rose is beautiful (6)

is associated with 'éloignement,' while the predicative *pulchra* involves 'rapprochement.'

Hjelmslev (1935/37: 100) is careful to point out that the characterizations of locative and nominative just given are not intended as universal definitions of these cases. The character of the nominative, accusative, etc., will vary from language to language, depending on the system of oppositions appropriate to each language; these labels are attributed on the basis of shared semantic content, while recognizing that dative in language A may participate in the system in a different way from dative in language B, it may have a different value therein (1935/37: 103).

According to Hjelmslev, the basic dimension of the system of case involves the three directional slots 'rapprochement'—'repos'—'éloignement,' but individual cases may distribute themselves over more than one slot, though there will be one case restricted to one slot; this 'intensive' case determines the orientation of the system. In Latin this is the ablative ('éloignement'); in Greek the accusative ('rapprochement') (Hjelmslev 1935: 101). For Hjelmslev what is universal is the dimension of direction and the range of mappings of cases onto slots that is allowed. The structure of the system also determines the syncretisms that pertain or evolve (1935/37: 103–04).

For Hjelmslev, too, cases may be expressed by word order: thus, present-day English has four cases attributed to it, nominative, transitive, dative and genitive, the first three of which are signaled positionally, as in (7):

The boy sent his mother a letter (7)  
Nominative + Verb + Dative + Transitive

(Hjelmslev 1935: 118); but in his account the mechanism of the interaction between case and word order remains unexpressed, as does that governing the interaction between case and adpositions. But it should be conceded that this continues to remain unclear, even, for instance, within the context of explicit case grammars. The notion of positional cases, also pursued in the for-long-dominant tradition of syntactic cases (cf. again, for example, Sonnenschein 1916), can also be seen as prefiguring the concept of 'syntactic' (versus 'morphological') case in the case theory elaborated within the framework of Chomsky (1981) (though Hjelmslev's Cases, and to some extent Sonnenschein's, have notional

content). But again much remains to be clarified there too.

The incorporation of the nominative represents perhaps Hjelmslev's major innovation within the localist theory of case. However, the main localist tradition has refrained from attempting to allow for the nominative directly in terms of the dimension of direction. And this continues in the work of J. M. Anderson (1971, 1977), who regards the nominative as typically associated with a neutralized value. This is based on a reconsideration of Hjelmslev's analysis and, not independently, the recognition that the notion subject might be given an intralinguistic interpretation. Nominatives-as-subjects represent for Hjelmslev an 'éloignement.' This is reminiscent of Dik's (1978) description of the subject as a starting-point for presenting the predication. But, in so far as this is valid, subjects represent a 'startingpoint' in quite a different sense from that in which the subject of (10a) might be said to represent a 'startingpoint'/'éloignement':

His actions benefited the community (10a)

The community benefited from his actions (10b)

and the subject of (10b) might be said to represent a goal/'rapprochement.' The characterization of the other cases in terms of direction has to do with their role in the perceived situation; Hjelmslev's view of nominative subjects as involving 'éloignement,' insofar as it is valid, has to do with how the information is presented, whatever the role in that situation of the subject. The subject remains distinct in its function.

Subject, too, despite Hjelmslev's strictures, can be argued to have a role in the grammar independent of its case-marking, though interpretations of its status vary (cf., for example, Keenan 1976 vs. Johnson 1977). In case grammar it is a neutralization of the case distinctions which Hjelmslev (and Anderson) argues are amenable to a localist interpretation.

Curiously, Hjelmslev makes a quite systematic use of the notion subject in his discussion of the ergative system of Tabassarianian (1935: 138–59), and of many of the other languages he discusses in detail. In ergative systems, the argument corresponding to the transitive subject in nonergative (so-called 'accusative') languages, such as Latin, occurs in a different case from (what would be) the intransitive subject, which occurs in the same case as (what would be) the transitive object. This is illustrated by the Basque sentences in (11):

Gizonak ogia jan du (11a)  
the-man + ERG the-bread eaten has

Gizona etorri da (11b)  
the-man arrived has



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*Gizonak* in (11a), corresponding to a transitive subject, is marked with the ergative inflection, while *ogia* (a) and *gizona* (b) are in the unmarked case, traditionally called the nominative, or absolutive. And verb agreement follows a similar pattern. Hjelmślev describes the Tabassaranian nominative (absolutive) as 'le cas général du tabassaran': 'Il indique indifféremment le sujet, le prédicat et l'objet et constitue le régime des prépositions' (Hjelmślev 1935: 150); while in the ergative use of what he calls 'l'instrumental-ergatif', 'où prédomine la fonction de sujet ... le cas en question est un casus transitivus qui insiste sur l'éloignement' (1935: 154). But it is unclear how, for Hjelmślev, subject-hood is to be established independently of the system of cases.

The discrepancy in the Indo-European languages between different genders as to whether nominative and accusative are distinguished in expression—nominative and accusative are identical with neuters, distinguished in the masculine (as in the Old English paradigms in (2) above)—may be a reflection of an earlier ergative system (neuters typically not functioning as transitive 'subjects') (on gender and case in various Indo-European languages, see, for example, Lyons 1968: § 7.4.3). Such an evolution is found elsewhere, as are systems 'split' between ergative and non-ergative (Silverstein 1976; Dixon 1979).

There is some debate as to whether ergative and accusative are simply different ways of encoding distinctively the two arguments of a transitive verb, such that one or other of them is identified with the argument of an intransitive, or whether the ergative system indeed obscures a basic division into subject and object, or whether, on the contrary, the ergative system shows less neutralization of the semantic distinctions attributable to case (for discussion see Comrie 1973; Anderson 1976; Anderson 1977: ch. 3; Dixon 1979; Smith 1996). Hjelmślev's position seems unclear—or perhaps unreconstructable in such terms.

A further, still less common way in which transitivity may be articulated by a case system is illustrated by the examples from Dakota in (12):

ma-čēka (12a)  
I-stagger

ma-yā-kte (12b)  
me-you-killed = you killed me

wa-low (12c)  
I-sing

ča-wá-pa (12d)  
him-I-stab = I stab him

Examples (12a) and (b) appear to illustrate the usual ergative situation, with *ma-* as 1st person absolutive. But (c) reveals that the ergative *wa-* of (d) is also used with agentive intransitives. This is often described as

an active system (here manifested concordially), and a form like *wa-* as manifesting an active case.

Another much-debated area involving a discrepancy between putative syntactic relations and case-marking involves so-called 'impersonal' constructions, illustrated from Old English in (13):

Him ofhreow ðæs mannes (13)  
He/they + DAT pitied + 3SG the + GEN man + GEN

which is a finite declarative and nonelliptical, but which does not contain a nominative ((13) contains a dative and a genitive argument only) or a controller of concord (it is invariably third person singular in such a construction, as in (13)). It can nevertheless be argued on syntactic grounds that the dative in (13) is a subject (J. M. Anderson 1988).

Here too should be noted the syntax of the partitive case in Finnish, for example. As well as marking a noun dependent on a numeral (other than 'one')—*kaksi miestä* 'two man + PARTV' (= 'two men')—the partitive can also be used in subject or object (or predicative) function, to indicate nonexhaustion of the domain denoted by the noun (or adjective); as Lyons (1968: Sect. 7.4.4) observes, 'the traditionally recognized case-inflexions of the noun do not necessarily have just one, or even a primary, syntactic function':

Maitoa onpöydällä (14)  
Milk + PARTV is table-on  
(= There is milk on the table)

Nonexhaustion of a domain can be interpreted quasi-spectually:

Luen kirjaa (15)  
I-read book + PARTV  
(= I am reading a book)

('My action does not exhaust the book domain.') A further discrepancy between case-marking and grammatical relations is instantiated by the use of the Finnish nominative to mark the (direct) object when, as in imperative sentences, the subject is not expressed.

The content of case remains, then, controversial. There is some agreement that some members of the category in various languages reflect (concrete or abstract) spatial distinctions. But the status and function of 'syntactic' instances, particularly those labeled nominative, is still debated. Perhaps a typical view, however, despite Hjelmślev, would be that the nominative is that case which, among other things, is the unmarked morphological encoding of the subject. But, whatever the adequacy of this, such a view leaves unaccounted for the marked functions of nominatives, which are not entirely idiosyncratic, as well as the other discrepancies between case and grammatical relation exemplified above.



### 3. Dimensions of Case

The application of case labels to different languages can hardly be said to have been carried out systematically. This is unsurprising in view of the history of application (with varying idiosyncronic models), and unsurprising given their status—as, in Hjelmslevian terms, having different values by virtue of appertaining to different systems. But one can discern some consistency in the choice of the same term for cases in different languages with shared functions, syntactic or semantic—functions which can be independently established, semantically, syntactically, in terms of agreement patterns, etc. Thus, a case is called nominative if its functions include the marking of the subject, the primary trigger of concord on the verb. (The use by some grammarians of nominative in relation to ergative systems is perhaps an aberration here (see the discussion of (11) above), though such nominatives (absolutives) continue to be the primary concord trigger.) And an essive can be identified when there is a distinct case for (some) predicative nouns, in other languages a function of the nominative, though even in essive languages the nominative can usually also be predicative, with the nominative/essive distinction signaling some ‘aspectual’ difference, as in Estonian:

Mees on meie saadikuna Londonis (16a)  
(The) man + NOM is our ambassador + ESS in-London

Mees on meie saadik Londonis (16b)  
(The) man + NOM is our ambassador + NOM in-London

Example (16b) implies permanency (it is used of inalienable capacities); (a) introduces contingency (the man is not necessarily the permanent ambassador or is not necessarily always in London as such).

This is another ‘functional overlap’ of case and other systems in the grammar: elsewhere, a contingent/inherent distinction is marked by the use of alternative copulas (as *tá* versus *is* in Irish). Unsurprisingly, in this light, the essive/nominative opposition may also be associated with predicative adjectives rather than nouns, as in the Finnish:

Isäni on kipeänä (17a)  
Father is ill + ESS

Kivi on kova (17b)  
(The) stone is hard + NOM

denoting a similar ‘aspectual’ distinction (say, contingent versus inherent), elsewhere once more marked by alternative copulas. Here the association of case with adjectives does not seem to be secondary. And Tabassarianian even has a distinct form for predicative adjectives (Hjelmslev 1935: 140). Such examples suggest that the basic (nonconcordial) restriction of case to nouns is only typical.

Where a predicative is complement to a ‘change-of-state’ verb there may be a distinct transitive case, as again in Estonian:

Mees määrati meie saadikuks Londonis (18)  
(The) man + NOM was-appointed our ambassador +  
TRANSL in-London

Essives and translatives are typically historical narrowings of cases which were once generally local (and usually retain other local ‘uses’). Here and elsewhere where the spatial, including directional, basis for case functions is most transparent, application of case labels is relatively straightforward: consider the system of local cases of (20) discussed below (and see, for example, Lyons 1968: § 7.4.6). But what of the other traditional *syntactic cases*, the accusative, the dative and the genitive?

Accusative/accusativus is a (mis)translation of Greek *aitiatiké* (cf. for example, Robins 1951: 56), the case of the entity ‘acted upon.’ And certainly the prototypical instances, such as in (1) above, can be so regarded. More recently, however, following Rumpel, the ‘accusative’ has tended to be regarded as the case of the ‘direct object.’ Similarly, ‘dative,’ *dotiké* is the case ‘governed’ by verbs of ‘giving,’ as in (7) above; after Rumpel, it is the case of the ‘indirect object.’ The ‘genitive’ *geniké* is the case indicating the genus, or general type, which, as Hjelmslev (1935: 5) remarks, ‘*ne suffit pas pour les emplois multiples dont ce cas est susceptible*’; for Rumpel it is the ‘adnominal case,’ for others the ‘possessive.’ Even apart from Hjelmslev’s critique (Sect. 2 above), the character of these cases has been much debated. The ‘syntactic’ definitions of accusative and dative depend on the independent (linguistic) motivation of ‘direct’ and ‘indirect object’ (for discussion, compare, for example, Matthews 1981: ch. 6, Plank 1984; S. R. Anderson 1988). One issue involves languages, like Old English, in which verbs which take a single object may require that object to be marked as accusative, dative, or genitive. Dative and genitive objects are illustrated in (19):

hu he urum gyltum miltsa ð (19a)  
how he (on) our + DAT sins + DAT has—mercy

lifes belidenne (19b)  
of-life deprived

Are these indirect objects, or direct, or neither? Certainly, such objects in Old English fail to have passive equivalents in the nominative, as has the accusative, which on other grounds too seems to be the unmarked direct object marker. But it is unclear how Indirect is to be defined independently in general terms, if not semantically—or, by default, lexically, and thus idiosyncratically.

For Hjelmslev the distinction between syntactic and local cases as traditionally drawn, or between (primary) cases and neutralizations thereof (J. M. Anderson 1971, 1977), is illusory; a single dimension, of directionality, is involved. But he was also the first

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to formulate explicitly the other dimensions appropriate to the characterization of the semantic domain of the category of case. In many languages these dimensions are appropriate only to the description of adpositions, or of nouns (of relation); but Hjelmslev illustrates in some detail the articulation of the three dimensions with respect to the case systems of Tabassarian and Lak. The second dimension, with poles 'cohérent' versus 'incohérent,' involves 'une différence dans le degré d'intimité avec lequel les deux objets envisagés par le rapport casuel sont liés ensembles' (1935: 96). The so-called 'syntactic' cases are 'incohérent,' the 'local' cases 'cohérent' (1935: 97). The third dimension involves 'subjectivité' versus 'objectivité': 'Une relation entre deux objets peut être pensée objectivement, c'est-à-dire sans égard à l'individu pensant, et elle peut-être pensée subjectivement, c'est-à-dire par rapport à l'individu pensant' (1935:132). Hjelmslev illustrates this with the distinction between the French prepositions *devant* and *derrière*, on the one hand (subjective), and *au-dessus* and *au-dessous*, on the other (objective). Lyons (1968: § 7.4.6), for instance, distinguishes these as involving a 'relative' versus an 'absolute' point of reference. The dimensions form a hierarchy such that the appropriateness of the third to a system presupposes that of the second, and that of the second that of the first.

The second dimension also allows us to differentiate between the local cases (or adpositions) traditionally labeled 'inessive versus adessive,' 'illative versus allative,' 'elative versus ablative': the former are 'cohérent.' This distinction can be illustrated (in quasi-Hjelmslevian fashion) with the partial paradigm from Finnish in (20):

(20)

	0	+	÷	
<i>incohérent</i>	talolla	talolle	talolta	<i>ad-/ab-</i>
<i>cohérent</i>	talossa	taloon	talosta	<i>in-/ex-</i>
	-essive	-lative		

This display is described as 'quasi-Hjelmslevian' in that in terms of Hjelmslev's theory of case the assignment of case forms to categories involves other considerations than are taken account of in (20), such as the 'intensive' versus 'extensive' distinction discussed above. But it does represent a commonly adopted articulation of such a subsystem: the 'cohérent' cases are sometimes called 'interior,' the 'incohérent' 'exterior.'

To simplify again somewhat, Hjelmslev's third dimension, 'subjectivité,' versus 'objectivité,' allows one to distinguish the set of postessive cases ('at/to/from behind'—'posterior' cases) in a language like Tabassarian (which requires all three dimensions) as

involving orientation with respect to some independent reference-point. Given too the complex mapping between case forms and dimensions allowed by his theory, the same three dimensions accommodate distinctions not merely between 'interior' and 'exterior' cases but also between them (and 'posterior' cases) and superessives ('superior' cases). Others might be tempted to recognize a distinct dimension here; but the problems of interpretation are complex. Certainly, Tabassarian seems to represent the maximal dimensionality that has to be attributed to a case system.

It is worth noting too, at this point, that complex case systems also tend to exhibit agglutination rather than cumulation. Thus, the Tabassarian 'instrumental-comitative' and 'supracomitative' share a morpheme *-ri* which combines with distinct morphemes to form morphological complexes: the expression of 'instrumental-comitative' is *-f + ri*, with the *-f* morpheme recurring in the 'second conversive' *-f + indi*, for instance. The correlation between individual morpheme and case category/dimension deserves to be further investigated (cf. Anderson 1998): the 'instrumental-comitative' and 'second conversive' are also referred to as the 'comitative-second inessive' and 'ablative-second inessive,' respectively. Hjelmslev (1935: 141), for instance, recognizes that the individual morphemes in such sequences (in Tabassarian and elsewhere)—what he terms 'particules'—have independent semantic content: each is associated with a 'cellule.' These again represent a departure from what was described initially as typical: is the departure a function of increasing complexity of the case system?

Tabassarian illustrates that case may be expressed simultaneously by more than one suffix. Basque appears to show that a single noun may simultaneously bear more than one case. This phenomenon, known in the tradition of French grammars of Basque as 'surdéclinaison,' is illustrated in (21):

etcheko  
of the house (21a)

etchekoak  
those/the people of the house (21b)

etchekotzat  
for (the benefit) of the house (21c)

*Etcheko* is marked with the 'local genitive' suffix *-ko* and an function as an independent case, e.g., as the modifier another noun (*etcheko nausia* 'the master of the house'); put in (21b) and (c) other inflections have been added, respectively the plural absolutive (nominative) and the prolativ ('for ...'). However, rather than suggest that in such instances a single noun bears two cases, it seems preferable to regard the 'local genitive' in (21a) as being able to form the base for a derived noun to which may then be added further case

inflections. The structure of (21b) and (c) involves two nouns, one derived from the other; what is unusual is that the base noun is itself inflected for case.

To return to dimensionality in the case system: instrumental (or instructive) and comitative (mentioned above) are two further commonly recognized cases, usually grouped with the local cases, and again allowed for by Hjelmlev in terms of (mappings onto) his three dimensions. The term 'instrumental' is typically applied to the case form marking the instrument or tool, or (more abstractly) means or path, whereby some action is carried out, as in the Finnish:

- Näen sen omin silmin (22)  
I-see it + ACC own + INS eyes + INS  
I see it with my own eyes

The 'comitative' usually marks the animate (typically human) which is conceived of as accompanying the participation of some more centrally involved participant in a predication, as in Finnish:

- Lähden lapsineni (23)  
I-go children + COM + my

Finnish (and other languages) also has an 'absentive,' denoting lack of accompaniment:

- Olen rahatta (24)  
I-am money + ABV

These cases raise further issues of dimensionality, in terms of how they relate to the (other) local cases, and how they are interrelated.

In many ergative systems, the ergative marker and the instrumental are identified; in other systems, such as Estonian, instrumental and comitative are identical (cf. the English preposition (*with*); elsewhere, comitatives seem to be related (at least historically) to coordinators. Much in this area, too, remains controversial. And, more widely, to the extent that Hjelmlev's theory, in particular, has not been generally accepted (or at least has been ignored), a general theory of the domain of case and its internal structure has yet to be offered, as have careful descriptions of the range of types of case systems that are evidenced. The brief survey given here is far from exhaustive, even of present knowledge: how, for instance, is the similitive (sometimes called 'equative'—'like ...') of Ossetic (Abaev 1964) to be accommodated?

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## Categories, Linguistic

G. K. Pullum

A category, in the sense relevant here, is a class or division in a general scheme of classification. The word has a long history, tracing its origin back to Latin *catēgoria* and Greek *katēgoria* originally meaning 'accusation' (as in 'Murderer!'), then 'assertion' (as in 'You are a murderer'), then 'predication' (as in 'is a murderer'), and thence taking on various more specialized meanings in logic, philosophy, and mathematics, where it has been used for a variety of different kinds of specified class or set (for example, a 'category mistake' in philosophy is the error of confusing one logical type or category with another, e.g., sets with atoms).

The most familiar linguistic categories are the traditional major word classes of morphology and syntax known as the 'parts of speech.' At least some understanding of the parts of speech is apparent in work as much as four thousand years old: Black (1989) points out that a written grammatical tradition flourished among the ancient Babylonians, during a period covering nearly two millennia before the time of Panini's work on Sanskrit, and the pedagogical grammatical works on Sumerian that the Babylonians produced from about 2300 BC onward (apparently for teaching Akkadian speakers Sumerian, the key language of scribal training and Mesopotamian culture) recognized the distinction between verbs and nouns and evinced an implicit understanding of a wide range of other linguistic categories.

Noun and verb are often regarded as the most central of the parts of speech. It has occasionally been proposed that there are human languages that do not differentiate between noun and verb in their syntax or morphology; the Wakashan languages (Kwakw'ala, Nitinat, Nootka, etc.) have been cited in this connection. Dixon (1977: 71–2, n.1) gives a brief but useful summary of the evidence that although many stems can serve as either noun or verb according to how they are inflected, no accurate morphology and syntax could be given for these languages without drawing the noun/verb distinction.

Adjective, adverb, preposition, conjunction, etc., are regarded as secondary by some writers in the tradition of Greek, Latin, and English grammar. Some grammarians, motivated more by morphology than by syntax, used the term 'noun' for a broad category embracing adjective and substantive as subcategories (nouns and adjectives have basically the same inflectional endings in the classical Indo-European languages). Prepositions have sometimes been treated as a subcategory of adverbs; adverbs are sometimes regarded as a special subclass subsumed under adjective; and so on. Even limiting attention to

English, a remarkable array of different parts of speech systems for English may be found in the grammatical literature (see Michael (1970) for a detailed study of the English tradition and its basis in Greek and Latin scholarship).

Early classifications were usually linked to a proposed semantic basis for the distinction between the different classes of words: nouns were held to be names of persons, places, or things; verbs were supposed to name (in the typical case) actions; adjectives were claimed to denote qualities or attributes, and so on. It is clear enough that such loose and intuitive semantic bases for classification are not capable of serving as a basis for scientific linguistics. Consider the sentence (1):

Sandy likes to refrain from conversation. (1)

The word *conversation* can be seen as the name of a 'thing' only for the circular reason that one uses the word *thing* as a cover term for all count nouns. It is closer to denoting an activity than to denoting any kind of an object; but the word is (by all the morphological and syntactic criteria that linguists consider important) a noun, not a verb. And *refrain* can hardly be said to denote an action; quite the reverse: it indicates the *non*-occurrence of an action. Then consider the sentence (2):

Sandy is fond of declining to converse. (2)

Although (2) is essentially synonymous with the previous example, it has the adjective *fond* substituting for the verb *likes*, the verb *converse* substituting for the noun *conversation*, and *declining*, a verb in the gerund-participle form, functioning as a noun in that it is in construction with the preposition *of* (which seems, incidentally, to be completely without meaning here—a different problem for meaning-based theories of the parts of speech) but also as a verb in that it has *Sandy* as its logical subject.

For reasons such as this it is widely agreed among linguists that the parts of speech are not to be defined (at least, not in any easily specifiable way) by reference to the semantic properties they share.

This remains true in the most formal of logically based semantic theories. For example, for semantic purposes one might want to let nouns like *bird*, intransitive verbs like *sing*, and nonrelational adjectives like *blue* denote exactly the same kind of object, namely sets of entities: *bird* would denote the set of birds, *sing* would denote the set of singers (i.e., entities that sing), and *blue* would denote the set of all things reflecting light predominantly in the blue range. The basic semantic rule for simple English declarative



sentences could be stated by saying that a sentence with SUBJECT + PREDICATE form is true if and only if the set denoted by the subject is included in the set denoted by the predicate; thus *Birds sing* is true if and only if the set of entities that sing includes the set of birds. ADJECTIVE + NOUN modification could be given a semantics by saying that the resultant phrase denoted the set of entities in the intersection of the sets named by the noun and the adjective, so *blue bird* would denote the set of entities that belong to both the set of birds and the set of blue things.

This is an oversimplified sketch of how a semantics might be assigned to some English word classes, but it suffices to make the point that under any view that had common nouns, intransitive verbs, and nonrelational adjectives all denoting sets, or all denoting properties, no syntactic distinction between nouns, verbs, and adjectives could be based on semantics alone. It should be noted, though, that some linguists have continued to argue for some semantic basis to the theory of major word classes; Lyons (1966) is one example, and Dixon (1977) is another. Strawson (1970) argues for a similar kind of semantically based grammar from a purely philosophical perspective, and the school of thought known under the banner of 'Generative Semantics' in the 1970s (on which Seuren (1974) provides a useful collection of readings) maintained that semantics was the basis of all syntax in some sense: deep syntactic structure and logical or semantic structure were the same thing, and in the latter type of structures the only category distinctions were those between predicate and argument (representable as V and NP, but defined and deployed in semantically directed ways).

It should also be kept in mind that there are certainly some covert subcategories that clearly have a semantic basis—that is, subclasses of the familiar syntactic word classes that are semantically (and not morphologically) defined yet clearly play a role in the grammar. Whorf (1945) coined the term 'crypto-type' for these. An example of Whorf's from English is the subclass of verbs that take the prefix *un-* to form another verb denoting the converse of the activity. The class comprises just those verbs that refer to activities of covering, encumbering, or surface attachment; for example, *unveil*, *untangle*, and *unhitch*, but not *\*unbuild*, *\*unsee*, or *\*unsend*. Another example of the type of highly semantic subclass that Whorf would have called a cryptotype is the class of verbs *X* that can be used in the *go Xing* construction (e.g., *go swimming*, *go blackberrying*). As pointed out by Silva (1975), it involves a class of verbs denoting peripatetic, non-goal-oriented activities that are either recreational or aimed at the cumulative acquisition of physical objects (thus one does not find activities referred to by the phrases *\*to go reading* or *\*to go laughing*). Cryptotypes can thus be based on highly specific and rather complex clusters of semantic properties.

Because semantic (or 'notional') categories are nonetheless insufficient as a basis for classification of words into the major parts of speech like noun and verb, modern linguistics has concentrated on specifying word classification criteria based not on semantics but on morphology (word structure) or syntax (sentence structure). Some linguists of the American structuralist school between about 1930 and the early 1950s took the idea of identifying word classes by their syntactic distribution to an extreme. Fries (1951) provides a good example, actually *defining* noun (renamed Class 1 in an effort to visibly reject traditional notions) as the category of words that can be used grammatically to fill the blank in *The \_\_\_\_\_ was good* or *The \_\_\_\_\_ were good*, and adjective (renamed class 3) as the class of words that can fill either of the blanks in *The \_\_\_\_\_ one was \_\_\_\_\_* or *The \_\_\_\_\_ ones were \_\_\_\_\_* (where *one* can be replaced by any class 1 word).

There are many difficulties with such extreme operationalist theories of grammar. Consider, for example, the examples in (3):

The young were good. (3a)

The very young were good. (3b)

The youngest were good. (3c)

The grammaticality of (3a) seems to tell us that *young* is a class 1 word. But the occurrence of the class 3 modifier *very* in (3b) seems to tell us that it is a class 3 word. Likewise, the superlative degree suffix *-est* can never occur on a class 1 word, yet (3c) is grammatical, again suggesting (through morphological evidence) that *young* is class 3. And Fries's own tests for class 3 again confirm this: both (4a) and (4b) are grammatical, showing directly that *young* must be on the list of class 3 words:

The young ones were good. (4a)

The good ones were young. (4b)

Yet it would be highly undesirable to accept that all words like *young*, traditionally conceived of as adjectives, are also class 1 words, because class 1 words take the plural affix *-(e)s* and occur with the indefinite article *a(n)*, yet this is not possible for words like *young*:

\*Youngs are good. (5a)

\*A young arrived. (5b)

What is needed here is some way of acknowledging that a plural noun phrase with generic reference to the class of humans with a certain property *P* may consist of the definite article plus an adjective denoting *P*, without a noun (class 1 word) being present. A simplistic definition of word classes by reference to a few select diagnostic contexts of occurrence cannot provide the basis for an account of this sort.



Morphological criteria (and 'morphosyntactic' criteria, based on phenomena that have implications in both morphology and syntax) support the postulation of categories denoting smaller classes of forms than those denoted by 'noun,' 'verb,' etc. Feminine, singular, indicative, third-declension, superlative, etc., clearly denote subcategories of the traditional parts of speech: the feminine words are a subclass of the class labeled noun; indicative is a subclass of verb; superlative is a subclass of adjective; and so on.

Modern work on syntax, assuming constituent structure analysis of sentences, uses such labels as noun phrase (NP), verb phrase (VP), clause, sentence, etc., to label constituents larger than the word. They are distinct from word classes in what, in a difficult and abstract article that became influential for many British syntacticians, Halliday (1967) proposed to call 'rank.' Labels like NP and VP bear the same relation to classes of phrases as the traditional parts of speech bear to classes of words.

In modern work the word 'feature' is used for a set of mutually exclusive properties of words or phrases. A feature NUMBER might be postulated with singular, dual, and plural as its possible 'values.' A feature paired with a value can be called a 'feature specification.' (Intuitively, NUMBER is like a question to which 'singular,' 'dual,' and 'plural' are the different possible answers, and a feature specification is like a question paired with an answer.) The notation  $F : v$  will be used in this article to indicate that the feature  $F$  has the value  $v$ . Thus the feature specification NUMBER: plural would be a grammatical device to indicate that the feature NUMBER has plural as its value, hence that the expression having that feature specification as part of its grammatical representation is a plural noun rather than a singular or dual one. (In phonology a different notation for feature specifications is familiar: '[+VOICE]' would be used where the notation in this article uses 'VOICE: +' to indicate that VOICE has the positive value '+'.)

The rather unusual use of the term 'category' in Jespersen (1924: 53) may best be understood in terms of this modern sense of feature. Jespersen defines categories as 'syntactic ideas [that] naturally go together, forming higher groups or more comprehensive syntactic classes'; thus, for example, he proposes that 'The singular and plural (with the dual) form the category of number.' The modern usage, as just noted, would be to say that singular, dual, and plural are the possible values for the feature NUMBER.

It has become common in syntactic theories to assume a system of categories known as 'X-bar theory', which provides a way of relating phrasal categories to lexical ones by way of a notation for indicating the way in which phrasal categories are founded on heads (where heads, for this purpose, are obligatorily present and definitionally crucial daughter subconstituents that give phrases their

special character: NPS owe their ability to be singular or plural to the fact that they are built around nouns; VPS can bear tense and thus make reference to time because they are built around verbs, and so on. (See Zwicky (1985) for an important contribution toward disentangling the various other notions of the term 'head' that have gained currency in syntax, and a discussion of their inappropriacy within morphology.)

Under X-bar theory, a phrase that has N as its head (the minimal noun phrase, containing just the noun and its most immediate co-occurring constituents) would be labeled  $\bar{N}$  (read as 'N bar,' and for greater typographical convenience often notated as  $N^1$  or, as here,  $N'$ ). The type of phrase is determined by N, and the bar level (which, intuitively, denotes how inclusive the phrase is of non-head constituents) is 1. A more inclusive noun phrase, with an  $N'$  as its head, would have the label  $N''$ , with bar level 2. Like any other property of constituent labels, bar level can be represented in terms of a feature, call it BAR, which takes numerals between 0 and 2 (or some other upper limit) as values (an idea due to Gazdar, et al. 1985).

Also associated with X-bar theory (but logically quite distinct from it) is the decomposition of traditional part-of-speech labels like 'noun' and 'verb' into feature specifications. For example, it is common to assume that noun and adjective share the feature specification  $N: +$  while verb and preposition have the converse specification  $N: -$ , while verb and adjective share a specification  $V: +$  which noun and preposition lack. The class of verbs and adjectives together (the categories that show agreement in person and/or gender and/or number in many languages) can then be referred to by means of the specification ' $V: +$ ,' and the class of full verb phrases and adjective phrases together is simply the class of  $V: +$  constituents with bar level (say) 2. (A discussion and mathematical clarification of the main content of X-bar theory, with further references, may be found in Kornai and Pullum (1990).)

Since feature specifications were introduced into formal syntax, it has become standard to continue to use the term 'category' for whole constituent labels but to regard a category label as a 'set of feature specifications.' To be more precise, categories can be formalized mathematically as (partial) functions from feature names to values. A function assigns to each member of some set a unique member of some other set (in the way that an address list assigns to each of a set of names a unique address). A function is partial if there is something in the first set to which it does not assign anything from the second set.

Consider a telephone directory in which there is one phone number with every name but some people do not have their addresses listed. Such a directory represents a partial function from the set of names listed to the set of addresses given, but a total function from the

set of names listed to the set of telephone numbers given.

The category of third person plural feminine noun phrases can be regarded as the set of expressions characterized by a specific partial function from features to values: the feature 'N' is assigned the value '+', the feature 'V' is assigned the value '-', the feature 'PER' (person) is assigned the value '3rd,' the feature 'NUM' (number) is assigned the value 'plu' (plural), the feature 'GEN' (gender) is assigned the value 'fem' (feminine), and the feature 'BAR' is assigned the value '2.' This set of assignments can be represented using a notation (Fig. 1) introduced by Gazdar, et al. (1988).

N	+
V	-
BAR	2
PER	3rd
GEN	Fem
NUM	Plu

Figure 1.

There is no more and no less to the notion of a third person plural feminine noun phrase than what this diagram indicates: being a third person plural feminine noun phrase simply means having this assignment of values to features.

Current theories of generative grammar tend to be inexplicit about the details of their feature systems, but it is clear that they have to be assuming something of this sort. Operations such as checking that some constituent has appropriate features to occur with another must involve verifying either that all the features are assigned the same values in the two categories, or (a slightly weaker notion known as *Unification*) that there is no feature on which they disagree about what value is assigned.

The features which have been considered so far have simple atomic symbols or labels (like 'singular' or '+') as their values. But this is not a necessary limitation. Functions can have any kinds of objects as the values they assign: atomic objects (like numbers), or sets (of numbers or anything else), or complex data structures (like postal addresses), or even categories. Thus category labels can in principle have internal structure that embodies recursion: a feature assigned a value by some category can have as its value a category label.

There are applications for this idea. An example would be the use of categories like V[AGR:NP [PER:3rd]], i.e., verb in agreement with a third person noun phrase (e.g., Latin *amat* 'loves').

In the diagrammatic notation used in Fig. 1, the category label for 'present tense verb phrase agreeing

N	-
V	+
BAR	2
TEN	Pres
AGR	●

N	+
V	-
BAR	2
PER	3rd
GEN	Fem
NUM	Sing

Figure 2.

with third person singular feminine noun phrase' could be represented as given in Fig. 2.

As syntactic categories are made more and more complex in ways like this, it becomes easy to see that they can represent relational information. (This runs counter to the standard view that categorial information like 'is a noun phrase' must be distinguished from relational information like 'is the subject of its clause.'). For example, if there can be a category with a complex label like the one above, which means intuitively, 'present tense verb phrase agreeing with a third person singular feminine noun phrase,' it is a short step to a category that could be glossed, 'present tense verb phrase that needs to combine with a third person singular feminine noun phrase in order to form a clause,' which gives information not just about the constituent itself but about relations it bears to other constituents. Exploration along these lines leads to theories of a type that have been familiar (through the work of logicians like Adjukiewicz and Leśniewski) for several decades and is generally referred to as categorial grammar.

Categorial grammars may (if constraints are not imposed) have an infinite number of different categories. There is nothing incoherent about such an idea; although traditional, structuralist, and transformationalist approaches have generally assumed a finite list of distinct grammatical categories, there are various formal theories of grammar in which (in effect) the notion of an infinite category set is embraced; see Gazdar, et al. (1988) for a way of making this idea explicit in algebraic terms.

This article has been quite careful in its use of terminology, distinguishing typographically between, for example, talking about nouns, talking about the noun category, and talking about the term 'noun' which names that category. The terminological system employed is refined from the usage of linguists, but it is by no means universally followed in the linguistics community. Some writers broaden the use of the term 'category' or shift its meaning and/or that of related terms, and some employ locutions that would have to be understood, when set alongside

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the usage of this article, no more than a shorthand—and an easily misunderstood shorthand. In particular, it is common for category to be used to denote the *labels* of constituents in grammatical representations, rather than the sets of expressions they label.

Here, a class of expressions sharing a particular grammatical description is called a 'category'; a symbol or formal notation used in a grammatical description to designate a category is called a 'category label' or simply 'label'; an expression belonging to a category is called a 'constituent'; the point in a subtree at which its category label is affixed is called a 'node'; a designator for a range of mutually exclusive attributes of constituents is called a 'feature'; an indicator of a specific attribute from the range of a certain feature is called a 'value'; and a feature-value pair is called a 'feature specification.'

In much linguistic literature these distinctions are not observed. Thus, the various works that have postulated an 'empty category principle' are concerned not with empty categories (classes of expressions that have no members) but empty constituents (represented as nodes with no daughters); the various works that have used the term 'node admissibility conditions' for tree-defining statements like 'S → NP VP' (which allows two nodes with the category labels NP and VP to be daughters of a node with the category label S) are really talking about label admissibility conditions; the works that talk about 'moving a category' with a movement transformation are really talking about moving a constituent; the works

that talk about one category bearing the relation of c-command to another are actually talking about a relation between nodes; and so on.

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## Classifier Languages

C. A. Craig

Classifier languages are languages with overt systems of nominal categorization realized by sets of classifiers. By and large European languages are not considered 'classifier languages,' although they exhibit two systems of classification that are akin to classifier systems: the very grammaticalized phenomenon of gender (French: *le* (masculine) *couteau* 'the knife,' *la* (feminine) *table* 'the table'; German *der* (masculine) *Löffel* 'the spoon,' *die* (feminine) *Gabel* 'the fork,' *das* (neuter) *Messer* 'the knife') and the abundant lexical expressions of unit counters and measure terms (English *a piece of paper*, *a cup of milk*, *a handful of candies*, *a pile of clothes*). The characteristics of classifiers are that, unlike gender systems, they cover a great variety of semantic domains, and that, unlike unit counters and measure terms, they exist in other contexts besides quantification and

cover a much greater variety of semantic domains.

Classifier systems are found in languages of Asia, Oceania, Australia, Africa, and the Americas and come in several types which vary in their semantics, the size of their inventory, their morpho-syntactic status and their pragmatic use. Prototypical examples of classifiers (CL) are:

<b>Japanese</b>	
empitsu ni-hon	'two (long) pencils'
pencil two-CL: long	
inu no-hiki	'two (animal) dogs'
dog two-CL: animal	
no' chiyo	'the (animal) chicken'
CL: animal chicken	
ixim wah	'the (corn) tortilla'
CL: corn tortilla	

(Craig 1986)

**Ponapean**

kene-i mwenge 'my (edible) food'  
 CL: edible food  
 were-i pwoht 'my (transport) boat'  
 CL: transport boat

**Sesotho**

mo-tho é-mo-holo ó-rata O-ntjá é-ntle eá-hae  
 1 1 1 9 9 9 1  
 person big he/she-like dog beautiful  
 of-his/her  
 'The old man/woman likes his/her beautiful dog'

ba-tho bá-ba-holo ba-rata li-ntja tsé-ntle tsá-b ona  
 2 2 2 2 10 10 10 2  
 people big they-like dogs beautiful of-them

**1. A Morphosyntactic Typology of Classifiers**

There is no established comprehensive typology of classifier systems and great variation in the terminology used to describe them. Some basic terms such as noun class, noun classifier, numeral classifiers are used with pervasive inter-changeability which creates some confusion in the literature. An unresolved issue is exactly which classification systems should be included in any typology of classifier systems and which not, from the most grammaticalized gender systems to the most lexical mensural classifiers. The typology presented here is all inclusive; it incorporates well established types, as well as types either not always recognized as distinct or often left out. The terminology chosen to refer to the various types is based on the syntactic locus of the classifiers.

**1.1 Gender and Noun Class**

Gender is either not included in classifier typology or considered an extreme case of noun class system. Gender systems, which are common in European languages, have either two or three classes (M/F (/N)) to which most nouns are assigned arbitrarily, beyond the recognition of sex differences for animate nouns. Noun class systems are more typical of languages of Africa and commonly have between five and twenty classes. More semantic content can be ascribed to noun classes than to genders, as shown for the Reconstructed Bantu classes:

Class 3/4	plants	Class 12/13	small objects
Class 5/6	fruits	Class 14	masses
Class 7/8	inanimates	Class 6	liquids
Class 9/10	animals	Class 15/6	paired body parts
Class 11/10	elongated objects	Class 15	infinitive nominalizations

Gender and noun class systems share the characteristic of forming part of elaborate agreement systems. The gender/class, which may or may not be marked on the noun itself, is marked overtly on articles and modifiers within the noun phrase and on the predicate. Sometimes noun class systems are referred to as 'concordial,' although the term may not be felicitous since, at some level, all classifiers are 'concordial' to the extent that they are always in a relation of agreement with the noun they classify.

**Spanish**

esta flor roja es bonita  
 this: F flower(F) red: F is pretty: F  
 'this red flower is pretty'

**1.2 Numeral Classifier Systems**

Numeral classifiers are the most common and recognized type of classifiers. They are called 'numeral' because they appear in the context of quantification, always next or bound to a number or quantifier. They secondarily occur with demonstratives and occasionally on adjectives too. Numeral classifiers are very widespread in Asia and are also found in the Americas.

**Chinese**

sān-ge ren ; nei-tiáo niú; nèi-liù-běn shū  
 three-CL person that-CL cow that-six-CL book  
 'three people' 'that cow' 'those six books'  
 (Li and Thompson 1981: 105)

j-p'ej alaxa 'one(round) orange'  
 one-CL(round) orange

j-ch'ix tzaj-al kantela 'one (longish)  
 red candle'  
 one-CL:longish red-ATTR\* candle

j-kot le'e'that one(animal)  
 one-CL: four-legged that  
 (\*ATTR = Attribute)

Numeral classifiers may come in large numbers (dozens to hundreds), although descriptions of such large systems often do not distinguish between sortal and mensural classifiers, or between inventory and actual use. Mensural classifiers constitute a large open ended category which corresponds to measure terms in non-classifier languages; the sortal classifiers have no equivalent in non-classifier languages. They specify units in terms of which the referent of the head noun can be counted. In Tzotzil, for instance, of the several hundred numeral classifiers identified, only eight are sortal classifiers. In that language both types can be distinguished by their anaphoric behavior: sortal classifiers are used anaphorically, mensural are not. In Kanjobal, a neighboring Mayan language, the difference appears in agreement. Numbers carry a classifier which agrees with mensural classifiers if one is present, but with the head noun if a sortal classifier is present:

**Kanjobal**

ox-ep' tinan ep' naj winaj  
 3-NbCL MensCL class/pl NCL noun  
 INAN group HUMAN man man  
 'three groups of men'

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ox-wan k'tan ep' naj winaj  
 3-NbCL SortCL class/pl NCL noun  
 HUMAN separated HUMAN man man  
 'three separated men'  
 (\*NbCL = Numeral Classifier)

### 1.3 Noun Classifiers

Noun classifiers constitute a type of their own, although they are not widely identified as such in the literature. In fact, the expression 'noun classifier' is often used to refer to numeral classifiers. They are realized as free morphemes standing next to the noun and used independently of quantification. They are a less common type, found in some languages of Meso America and Australia:

#### Yidiny

mayi jimirr bama-al  
 CL:vegetable-ABS yam-ABS CL:person-ERG  
 yaburu-Ngu 2julaal  
 girl-ERG dig/PAST  
 'The (person) girl dug up the (vegetable) yam.'  
 (ABS = Absolute, ERG = Ergative)

#### Jakalte

xil naj xuwan ox-konh no' lab'a  
 saw CL:man John 3-NbCL:animal CL:animal snake  
 '(man) John saw three (animal) snakes'

kaj te' tahnaj ipix  
 red CL: plant ripe tomato  
 'The ripe (plant) tomato is red'

The coexistence of numeral and noun classifiers in languages such as Jakalte argues strongly for recognizing them as distinct types of classifier systems.

### 1.4 Genitive Classifiers

They are often referred to as possessive or attributive classifiers and are mostly found in Oceanic languages. They are bound to the possessor noun while semantically agreeing with the possessed noun.

#### Ponapean

kene-i mwenge 'my(edible) food'  
 CL: edible-GEN/1 food

were-i pwoht 'my-(transport) boat'  
 CL:transport-GEN/1 boat

#### Tuyuca

bāriya-ya-da 'Mary's(long) string'  
 Maria-GEN-CL:long, flexible  
 kīī pakī-ya-wī 'his father's (canoe/car/  
 blowgun)'

3 father-GEN-CL: hollow

Genitive classifiers are only used with a class of 'alienable which is culture and language specific.

### 1.5 Verbal Classifier

Verbal classifiers are typical of North American languages, although they are also found in Australian languages and in American Sign Language. They fall into two subclasses: incorporated classifiers which are still recognizable as incorporated generic nouns, and classifying verbal affixes which are phonologically very eroded. Verbal classifiers are distinct from classificatory verbs which lexicalize the shape or position of the subject or object argument in copula verbal paradigms.

#### Diegueño

tu-kaT 'to cut with scissors or adz,  
 CL: round-cut to cut in chunks'

a-kaT 'to cut with a knife'  
 CL: long-cut

tu-mar 'to cover over a small object'  
 CL:round-cover

a-mar 'to cover over a long object, to bury  
 CL:round-cover someone'

#### Cayuga (Iroquian, Ontario)

(a) ohon'atatke: ak-hon'at-a:k  
 it-potato-rotten past/I-CL:potato-eat  
 'I ate a rotten potato'

(b) so:wa:s akh-nahskw-ae'  
 dog I-CL: domestic animal-have  
 'I have a (pet) dog'

(c) skitu ake'-treh-tae'  
 skidoo I-CL: vehicle-have  
 'I have a car'

#### Mundakuruku (Tupi stock, Brazil)

Ti dojot puye, o'-ti-mog ip baseya'a be  
 water bring when, they-CL: water-place they basin in  
 'When they brought water, they placed it in the basin'

#### Ngandi (Australian)

Gu-jark-yun ba-ga-bun-nu-ni  
 GU-water-ABS 3pl-sub-CL: water-eat-pcon  
 'and they drank water'

### 1.6 Overview of Typology

The types of classifiers identified above represent more focal points on various continua than discrete types. Many instances of classifier systems do not fit squarely any of the types considered. Some classifiers do not have a unique function as classifiers; they may share various inflectional and derivational functions, such as being markers of verbal nominalizations, diminutives, augmentatives, pejoratives; some sets of classifiers cover the functions of various types of classifiers. In Tuyuca, for instance, the same classifying morphemes appear on numerals, demonstratives, genitives, nominalizations, relativizations:



<b>Tuyuca</b>		
NUM cl.	(a) <i>pi-a-da</i>	'two strings/ two-CL:1D.Flexible ropes'
NUM/Dem cl.	(b) ( <i>ati-da</i> ) this-CL:D.Flexible	'this (string)'
GEN cl.	(c) <i>bāriya-ya-da</i> Maria-SG.GEN- CL: 1D.Flexible	'Mary's string'
derivational	(d) <i>yākēu-da</i> beads-CL:1D. Flexible	'necklace'
NUM cl.	(e) <i>sikū</i> one-CL: MALE	'one male'
GEN cl.	(f) <i>bāi-ya-gi</i> Mary-SG.GEN- CL: MALE.SG	Mary's male (creature: dog, bird)
Relative marker	(g) <i>basokā yaa-gi dī-yigi</i> people eat-CL:MALE.SG be-3M.SG.PAST.EV	'he was the one who eats people'

One type of classifier may blend into another in the process of decay, the way the Dyirbal noun class system has blended into a gender system. In many languages measure terms blend into numeral classifiers, while in others class terms of nominal compounds blend into classifiers, as in Thai.

## 2. The Semantics of Classifiers

Classifiers constitute fascinatingly complex and challenging semantic systems. While some semantic universals can be identified across the various systems, the apparent overall unruliness of the systems has stumped many a linguist trying to account for them systematically. However, in the late twentieth century classifiers have been providing a rich data base for developments in prototype semantics.

### 2.1 Universal Semantic Properties of Classifiers

An initial observation is that the semantics of classifiers are subsumed under the semantics of nouns (and verbs) from which they are derived. They fall within three general semantic domains: material, shape and function. By material is meant the essence of the object classified: whether it is animate or inanimate, if animate, whether it is male or female and if inanimate, of what substance it is made (wood, liquid, rock, etc...). The domain labeled shape is a large one which includes inherent and temporary physical characteristics of objects, such as shapes, consistencies and configurations. The primary semantic features of inherent shape that prevail around the world are the one-dimensional long shape, the two-dimensional flat shape and the three-dimensional round shape. In many languages the classifiers for those three prime shapes are derived from the nouns for 'tree,' 'leaf' and 'fruit,' respectively. The semantics of consistencies (rigid, flexible, soft, hard) seem to be

secondary developments. Configurations (in a pile, in a circle, in a straight line, evenly and unevenly scattered, etc...) are essentially temporary arrangements. The semantic domain of function includes both social inter-action with humans (status, kinship) and functional inter-action with inanimate objects (housing, transportation, edibles, clothing, tools, etc...).

An interesting aspect of the morpho-syntactic typology presented earlier is a certain correlation between the types of classifier systems and their dominant semantics. For instance, noun classifiers draw on the semantics of material and social inter-action, while numeral classifiers predominantly categorize by shape, and genitive classifiers by functional interaction. Verbal classifiers align themselves on the noun classifiers if they are of the incorporated subtype, classifying by material principally, while the older and phonologically more eroded subtype of verbal classifiers align themselves on the semantics of numeral classifiers, categorizing by shape.

### 2.2 The Nature of the Semantic Classes Defined by Classifiers

The semantic structure of the classes varies from very simple to very complex and heterogeneous. The simplest classes are those defined by 'unique' classifiers which classify just one object:

**Jakalte** *metx* 'classifier of *tx'i* 'dog,' contrasted with *no* 'classifier of all other animals.

**Thai** *chyag* classifier of *chaay*. 'elephant' in formal, honorific context, contrasted with *tu* for elephant in less formal speech and for other animals.

**Yagua** *na* classifier of banana tree trunk when standing and *mu* for chambira palm trunk when standing, contrasted with *nu* for all other tree trunks.

The most inclusive classes are those defined by 'general' classifiers. General classifiers are usually found in large numeral classifier systems, such as Tzotzil, Chinese, Japanese. They are used as substitute for more specific classifiers under certain pragmatic conditions (such as language acquisition or casual speech).

The most common classifiers are 'specific classifiers' which define heterogeneous classes. Some of the better known instances of extreme heterogeneity are:

#### Dyirbal

Class II **balan**: women, bandicoots, dogs, platypuses, echidna, some snakes, some fishes, most birds, fireflies, scorpions, crickets, the hairy mary grub, anything connected with water or fire, sun and stars, shields, some spears, some trees, etc.

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### Japanese

**-hon:** pencils, sticks, threads, ropes, needles, bananas, carrots, pants, guitars, teeth, cassette tapes, typewriter ribbons, camera films, telephone calls, letters, movies, TV programs, medical injections, and homeruns in baseball.

The heterogeneity of such classes is the result of various processes of extension which operate in the semantics of classifiers. A complete scenario of historical evolution attested for Chinese is the progression from the simplest class of one to a more and more complex class as the classifier evolves from unique to specific to general:

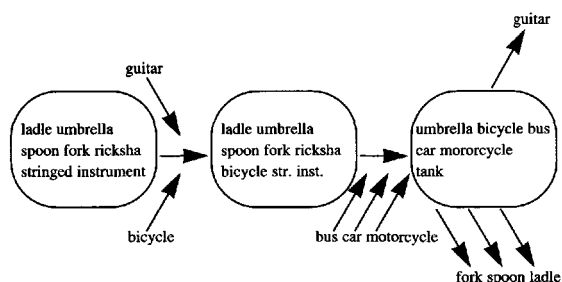
### Chinese

**ge:** unique: bamboo > specific: bamboo, lengths of bamboo > arrows, candles, dogs, chickens, horses > fruit, birds, people/general: people and unclassified objects

The analysis of the semantic structure of the heterogeneous classes of nouns marked by particular classifiers is challenging. The types of extension of classes that create heterogeneity are often best considered instances of prototype extensions or chaining, illustrated for the classifier *tua* for animate quadrupeds. A prototype analysis of the class would account for dog, cat, buffalo more central to the class than the limbed inanimates table and trousers and non-limbed animates snake and fish. But only a chaining analysis can account for the further inclusion in the class of shirt, dress and bathing suit.

Thai also offers documented examples of how the heterogeneity of a class can be reduced over time by the cyclic inclusion and exclusion of items:

### Thai



### 3. Nature of Classifier Systems

Classifier systems are heterogeneous, non-hierarchical, non-taxonomic organizations which vary idiosyncratically from language to language and culture to culture. Most classifier systems are collections of unique, specific and general classifiers which combine varied semantic categorization. For example, Kanjolan languages (including Jakaltek) have various

classifiers of human interaction (marking sex, kinship, status) together with a set of classifiers for inanimates which classify objects primarily by their essence (as plant, rock, dirt...) and secondarily by their consistency (as hail, glass and metal objects are incorporated in the rock class). It is very common in the large numeral classifier systems to have classifiers for shape, others for functions, with a combination of specific and general classifiers, and a large number of unique classifiers and repeaters.

A difference between classifier systems is also their ability to classify all nouns, including abstract ones such as time expressions. The more grammaticalized the system, the more all inclusive the classification is; while gender and noun classes by definition categorize all the nouns of a language. Genitive classifiers classify only 'alienable' nouns, noun classifiers preferably classify animates, and at most concrete objects, while numeral classifiers classify a much wider variety of nouns.

### 4. Origins and Evolution

The most common source of classifier morphemes are nouns, as is commonly seen in the phenomenon of repeaters. Another major source of classifiers is verbs, as is found with action numeral classifiers or functional genitive classifiers:

#### Tzotzil numeral classifiers

Verb:	Classifier:
<i>p'as</i> 'to cut'	<i>p'os</i> 'short length'
<i>k'as</i> 'to break'	<i>k'os</i> 'piece broken off'
	(corn on the cob, sugarcane, banana, wood, dry excrement)

#### laai genitive classifiers

Verb	Classifier
<i>hic</i> 'to chew'	<i>hicə</i> 'chewing gum'
<i>haat</i> 'to raise'	<i>haalee</i> 'domestic animal'
<i>hlək</i> 'to warm oneself,	<i>hlogu</i> 'fire (for warming oneself)'

In the first stage of development, classifier systems categorize some specific nouns; as the use of classifiers extends to more nouns, the meaning of classifiers evolves from concrete to more abstract and metaphorical. The most widespread example of such a process is found in the evolution of the nouns for tree, leaf and fruit into classifiers that eventually categorize objects by their shape as tree-like, i.e., long, leaf-like, i.e., flat and fruit-like, i.e., round. The evolution of the noun for canoe into a classifier for canoe and eventually for all transportation means which is documented for a number of North American languages represents a similar evolution from specific material classifiers to more abstract functional ones.

Classifier systems vary also in their ability to deal with new nouns and the extent to which the

semantics of the categories are reanalyzed over time, as in the Thai example given earlier. The semantics of classifier systems are therefore a matter of the age of the system, combined with its vitality and adaptability and its stage of evolution on a scale of grammaticalization. Proposed scenarios of evolution of classifier systems are still speculative, but suggest multiple origins for the various morphosyntactic types of classifiers: gender from noun classes which ultimately would come from nouns, some numeral classifiers from class terms which were originally nouns, verbal classifiers from noun incorporation. Case studies of language loss, such as the Dyirbal evolution of noun class markers to gender, parallels comparative evidence in Bantu languages of the historical evolution of noun class systems into pure agreement systems devoid of semantic motivation.

One of the interesting aspects of classifier systems is their status of marginal grammaticalization and the concurrent extreme fluidity and creativity of the systems. This translates into great cross dialect and cross language variation among related languages. Classifier systems are very locally idiosyncratic and are difficult to reconstruct. The Kanjobalan languages are a documented case of shared innovation of a noun classifier system with dialect variation that sprung up in the context of an older and family wide numeral classifier system, and spread through contact to neighboring Mamean languages. Another established contact phenomenon involving classifiers is the spread of numeral classifier systems in Asia from Thai to Chinese.

## 5. Classifier Use

Classifier systems differ greatly in their use, as can be inferred partly from their morphosyntactic typology. The more grammatical types, the gender and noun class systems, are obligatory, omnipresent, and by and large lexically determined. The numeral classifier systems are often characterized by a contrast between very large inventories of classifiers which are part of the lexicon of the language and the fact that only small sets of them are actually used in ordinary speech (as in Tzotzil, Chinese, Japanese etc.). The number and variety of classifiers used tends to increase with the level of formality of language, the strength of the linguistic tradition in the face of intense language contact, and the actual setting (market places being the prime setting for the study of numeral classifier use). An additional variable in the use of classifiers is the degree of choice left to the speaker and the range of possibilities of reclassification. It is typical of numeral classifier systems to allow various, although generally conventionalized, perspectives on a noun, such as the often quoted Burmese example of the river:

### Burmese

myi' te	tan	'river one line	(e.g., on a map)'
myi' te	'sin	'river one arc	(e.g., a path to the sea)'
myi' te	khu	'river one thing	(e.g., in a discussion of river in general)'
river one	CL		

Reclassification may also be allowed, in a limited way, for affective expressions, such as the use of round object classifier for women in Yucatec Maya, or that of animal classifiers for rumbustious children in Thai.

The role of classifiers in the grammar varies with the type of classifier. Gender and noun class systems with their elaborate agreement behavior keep track of syntactic structures while numeral and noun classifiers take more important roles as determiners in the referent-tracking system of the language. All classifier types can also play an important anaphoric role in discourse, although their use in that function is subject to great variation. Jakaltek noun classifiers are used as the only anaphoric pronouns of the language and are very present in texts, while Japanese numeral classifiers are used very sparingly anaphorically, as they compete with an extended system of zero anaphora and another set of anaphoric pronouns.

## 6. Conclusion

The upsurge of interest in classifier in the second half of the twentieth century systems has demonstrated that they are a challenging multi-faceted linguistic phenomenon. They are interesting to study from the perspective of the interaction between language and culture and language and cognition. They are semantic systems in constant state of evolution and they also represent systems at different levels of grammaticalization which can provide insights in the process by which grammar emerges from lexical sources. Much work remains to be done to do justice to the rich linguistic phenomenon of classifier systems.

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## Comparative Constructions

I. Crookston

English has a special construction, the *more ... than* construction, used for (putting it crudely) comparing two things. This is part of a cluster of constructions in English with related meanings and with some of the same syntactic properties. The first section of this article is devoted to an examination of this area of English syntax.

Other languages have, or are sometimes perceived as having, equivalent constructions. The second section of the article summarizes the main conclusions to be drawn from broad crosslinguistic surveys of these constructions, and includes some remarks on whether the constructions truly are equivalent.

The English *more ... than* construction has considerable similarities to the English relative clause, and these similarities aroused a great deal of theoretical interest in the 1970s. Section 3 below attempts to summarize the main points of the theoretical controversy that ensued, and its effects on linguistic theory in the 1990s.

### 1. Comparative Constructions in English

The English comparatives raise many major and minor descriptive issues, and any concise presentation is bound to leave loose ends.

As a way of tackling the subject, the question of what should and should not be included under the term is examined. The familiar *more ... than* construction has a certain set of characteristics, and which of these are critical to calling something a comparative is a matter for the wider pattern of description and ultimately for theory. Among these characteristics are the following:

- (a) It consists of a special word *more* and a clause beginning with a special word *than*. The meaning of the word 'special' here needs to be made precise, though only pointers are given here: *than* is special because it is one of a small set of words (including *that* and *whether*) that introduce subordinate clauses; and one possibility for arguing that *more* is special is that it is one of the few words which can premodify both adjectives and nouns (see (c)). (See also the discussion of *different ... than* below.)
- (b) The clause is unusually susceptible to ellipsis. To exemplify briefly, it can consist solely of a direct object or of an adverbial modifier:
  - (i) We have more problems [than solutions].
  - (ii) We have more problems [than before].
- (c) It can modify both adjectives, adverbs, nouns, and verbs:
  - (i) John is more healthy than he used to be.

- (ii) More loudly than before the tractor was moving across the grass.
- (iii) More problems than solutions came our way.
- (iv) John works more than he used to.
- (d) It can be discontinuous: other material, an adjective or noun, may intervene between *more* and *than*, as in say (c) above.
- (e) It can be premodified by a noun phrase:

Something [<sub>NP</sub> a certain amount] more concise than this is called for.

Possibilities such as *much* and *any* in this position seem also to be accounted for on the assumption that they are noun phrases. In other words, one can have [<sub>NP</sub> *much/any*] *more concise* for the same reason that one can have *He doesn't want* [<sub>NP</sub> *much/any*]: such words can make up a noun phrase without the presence of a noun.

Perhaps the only other construction which shares all of these properties is the *less ... than* construction. And even this does not share the well-known morphological property that *more* is replaced by a suffix (-*er*) with a certain (phonologically defined) class of adjectives.

The *as ... as* construction, as in:

- (1) John isn't as healthy as he used to be.

is usually regarded as a comparative construction. It has properties (a), (b), and (d). It lacks property (e), not for any syntactic reason, but because the resulting construction would be nonsense; so from a syntactic point of view one can say that property (e) would obtain but for irrelevant factors. An example would be:

- (2) \*Something [<sub>NP</sub> a certain amount] as concise as this is called for.

which is clearly nonsense.

Coming to property (c) the *as ... as* construction can be seen to have a much narrower range than *more ... than*. An equivalent of (c)(iii) or (c)(iv) is unacceptable:

- (3) \*As problems as before came our way.
- \*John works as as he used to.

And in this case an appeal to semantics is on unsurer ground: it is fairly easy to moot possibilities of what these sentences might mean. So the *as ... as* construction shares most but not all of the properties of the *more ... than* construction.

The *too ... for* construction (which as usual with infinitive clauses lacks the *for* when there is no subject) is exemplified in:

It is too late (for John) to arrive. (4)

This has a similar narrow version of property (c) to the *as ... as* construction. But it lacks property (b): the infinitive clause is not in any special way subject to ellipsis. For example, it cannot consist solely of an adverbial modifier:

\*John is too healthy for before. (5)

The only 'reduced' possibility is a plain noun phrase, as in *John is too clever for* [<sub>NP</sub> *me*], which might either be an elliptical version of the clause or an ordinary prepositional phrase. The *enough ... for* construction is similar to the *too ... for* construction in most respects, but has a similar wide range of functions to *more ... than* (property (c)).

It is apparent that what should be called a comparative construction depends on which of the properties is regarded as crucial, which in turn depends on the wider descriptive context.

Other constructions which share some of the properties of the *more ... than* construction, and so have to be considered in any question of what is a comparative, include the following. There is no space to give more than a brief indication of the descriptive issues that arise with them. First, there is the formal *so ... as* construction as in:

John isn't so healthy as he used to be. (6)

This patterns identically to the *as ... as* construction except that it is restricted to non-assertive contexts, so that:

John is so healthy as he used to be. (7)

is ill-formed.

Then there is the *so ... that* construction and the *such ... that* construction, as in:

John is so healthy that he can work an eighteen hour day. (8)

John is in such good health that he can work an eighteen-hour day.

These lack any special ellipsis possibilities, i.e., they lack property (b).

Then there is a cluster of constructions including:

the *different ... than* construction as in *a different idea than before* (9a)

the *same ... as* construction as in *the same idea as before* (9b)

the *other ... than* construction as in *some other idea than before* (9c)

Here the special possibilities for ellipsis for comparatives apply. But it is doubtful whether the head of the construction is 'special' in any sense that would make property (a) apply. *Different* for example seems to be a perfectly normal adjective. It takes premodification by *very*; and the *-ly* suffix. However property (a) were

to be made precise, it is doubtful whether it would apply to these constructions.

Finally, mention must be made of the *like* and *as* constructions exemplified in:

John was there on this occasion, as before: (10)

You don't make Yorkshire pudding like my mother used to.

These have the special possibilities of ellipsis, but none of the other properties.

### 1.1 Ellipsis in English Comparatives

Undoubtedly the most striking property of the English comparative is the ellipsis property of the clausal part of it referred to at several points above. Such clauses, however, do not have to contain any special ellipsis. For example:

The desk is longer than the door is wide. (11a)

The desk is longer than the plank is. (11b)

*The door is wide* and *The plank is* are acceptable as clauses in isolation, and have no ellipsis particular to comparative clauses. (The latter is an example of 'VP ellipsis,' which can occur even in main clauses in a suitable context, as in *The desk isn't very long. However the plank is.*) The former does, however, have a special gap. The following:

\*The desk is longer than the door is somewhat wide. (12)

is ill-formed: the adjective phrase cannot have any degree modification in this type of comparative. Similarly when it is noun phrases which are being compared: the noun phrase in the comparative clause cannot have any quantification, as in:

I eat more fruit than my husband eats cake. (13)

\*I eat more fruit than my husband eats much cake.

This gap has been regarded as akin to the gap in a relative clause: see Sect. 3 below for some discussion.

It has been shown above that the elliptical comparative clause can contain nothing but an adverbial modifier: this is special to comparative clauses. Similar are the presence of nothing but a direct object, or a subject as in:

The desk is longer than the door. (14)

and where there are two units in the elliptical clause, as in:

I'm eating more cake today than bread yesterday. (15)

The result is something—*bread yesterday*—that can by no means function as a clause in most syntactic constructions.

A further possibility is that a whole clause can be absent as in:

The desk is longer than John said. (16)

where a clause something like *it was long* is elided.



## Comparative Constructions

Where the unelliptical version of the comparative clause would include a repetition of the compared element, it is virtually obligatory to choose an elliptical version in which that element is omitted. Thus if a speaker wishes to express:

\*? I eat more cake than I admit I eat cake. (17)

with repetition of *cake*, it is virtually obligatory to choose one of the following elliptical versions of this:

I eat more cake than I admit I eat. (18)  
I eat more cake than I admit I do.  
I eat more cake than I admit.

and similarly with simpler cases such as \**The desk is longer than the plank is long*.

### 2. Crosslinguistic Classification of Comparative Constructions

One approach to language which has been applied to the study of comparative constructions is the typological approach, most notably in Andersen (1983) and Stassen (1985). Typological linguists aim to study a given construction as it is instantiated in a wide variety of languages. The most famous example of the typological approach is the classification of the world's languages by word order into Subject-Verb-Object or SVO, SOV, VSO, etc. The 'given construction' here is the clause containing a transitive verb, which can perhaps be fairly safely identified from language to language. Some comment on whether this is true of comparatives is made below.

Stassen (1985) identifies six common types of comparative construction in a sample of 110 languages, exemplified below. This article follows his classification, and, unless otherwise indicated, the examples are also taken from Stassen (1985). The terminology used is as follows. The 'comparee NP' is the NP about which a comparative construction is being predicated; the 'comparative predicate' is the main predicate describing the comparee NP; and the 'standard of comparison' or 'standard' is the unit to which the comparee is compared. In English, this terminology applies as illustrated in:

John	is more	intelligent	than Mary	(19)
comparee		comparative	standard	
NP		predicate	(or comparison)	

Since there are many languages where the translational equivalents of Indo-European adjectives are for the most part verbs, in these languages the typical comparative predicate is a verb.

#### 2.1 The 'Separative' Comparative

This is the commonest type. It is found in Latin, though not as the most common comparative construction (which is that with *quam*):

Equus est vir + o maior (20)  
horse is man + ABL bigger  
'The horse is bigger than the man'  
(*'The horse is bigger from the man'*)

(author's example). The defining feature is that the standard is marked in the same way as the language concerned marks motion away from a place. In Latin, the ablative case morphology is used for this latter purpose, hence the assignment to the separative class. (Here and elsewhere, something half way between a word-for-word gloss and a translation is added in an attempt to convey the syntactic construction exemplified. Too much weight should not be placed on these loose glosses, however.)

Apart from a separative case morphology, a separative preposition (or postposition) can be used, as in Japanese:

Nihon-go wa doits-go yori muzukashi (21)  
Japanese TOPIC German from difficult  
'Japanese is more difficult than German'  
(*'Japanese is difficult from German'*)

#### 2.2 The 'Allative' and 'Locative' Comparatives

These two types are similar to the separative, the only difference being that the preposition, postposition or case morphology which marks the standard is not used in the language concerned for motion away from a place. Instead, in the allative comparative, the marker is used for motion towards a place, or some similar meaning:

MAASAI: (22)  
Sapuk ol + kondi to 1 + kibulekeny  
is big the deer to the waterbuck  
'The deer is bigger than the waterbuck'  
(*'The deer is big to the waterbuck'*)  
TARASCAN:  
Xi aspekuskani ima + ni  
I be good him + DAT  
'I am better than him' (*'I am good to him'*)

The former has an allative preposition and the latter an instance of dative case morphology, an allative case.

In the locative comparative, the marker is used elsewhere in the language to express some such motionless locative meaning as 'on top of' or 'beside':

SALINAN: (23)  
Ragasmu in luwa ti + hek  
surely you more man on + me  
'You are more manly than me' (*'You are more manly on me'*)

#### 2.3 The 'Exceed' Comparative

Case markings and adpositions of motion and location play no part in this type of comparative. The standard of comparison is the object of a particular transitive verb which can be glossed 'surpass' or 'exceed.'

That said, there are some variations in the syntactic relation between the exceed-verb and the comparative predicate. First, sometimes the comparative predicate is subordinate to the exceed-verb:

- DUALA: (24)  
 Mbo e buki ngoa j + angwa  
 Dog it exceed pig INFIN + be smart  
 'A dog is smarter than a pig'  
 ('A dog surpasses a pig in being smart')

In this type, the comparative predicate is sometimes more like a noun than a verb or adjective. In (25a) below, there is a preposition marking this noun, while in (25b) the noun has no marker of its adverb-like function:

- MARGI: (25a)  
 Naja ga mdia + da de dzegam + kur  
 He SUBJ exceed me with tall + ness  
 'He is taller than me' ('He surpasses me in height')

- IGBO: (25b)  
 Ge ka m ike  
 You exceed me strength  
 'You are stronger than me' ('You surpass me in strength')

Second, sometimes the exceed-verb is subordinate to the comparative predicate:

- BARI: (26)  
 Kōrsuk a lokong to + tongun Jōkō  
 Kōrsuk is wise INFIN + exceed Jōkō  
 'Kōrsuk is wiser than Jōkō' ('Kōrsuk is wise surpassing Jōkō')

If a language has what are called 'serial verb' constructions as a way of subordinating one verb to another, the comparative often takes the form of such a construction with an exceed-verb and the comparative predicate taking the form of a verb, which makes it a variety of the 'exceed' comparative. Again, either the comparative predicate or the exceed-verb may be subordinate.

#### 2.4 The 'Conjoined' Comparative

In this type, comparative meaning is expressed by two straightforwardly conjoined clauses. For example:

- CAYAPO: (27)  
 Gan ga prik bubanne ba i pri  
 You you big but I I small  
 'You are bigger than me' ('You are big but I am small')

Here there is a coordinating conjunction glossed as 'but,' but more often this is absent:

- SAMOAN: (28)  
 Ua loa lenei va'a, ua puupuu lena  
 is long this boat is short that  
 'This boat is longer than that'  
 'This boat is long but that is short'

The absence of a conjunction is a feature of some languages' coordinate constructions as such, not a special feature of the comparative construction.

In the preceding two examples, the two halves of the coordinate construction have antonymous predicates, glossed as 'big' and 'small' and 'long' and 'short' respectively. This is obviously related to the fact that an isolated use of a gradable adjective such as 'big' in any language is an implicit comparative: 'big' means 'bigger than the relevant norm,' and similarly for other such predicates, which is why one can say 'a big mouse is a tiny animal' without contradiction. These coordinating comparatives go from a noncomparative utterance 'This boat is long,' which requires to be understood as 'longer than the relevant norm,' to 'this boat is long, that short,' which supplies a norm of the speaker's choice, by what is in a way the shortest possible route.

The other main subtype of the conjoined comparative has instead two instances of the same predicate, one of which is negated:

- EKAGI: (29)  
 Akia oaa ko ibo ko beu, ania ko ibo  
 your house it big it not my it big  
 'My house is bigger than yours'  
 ('Your house isn't big and mine is big')

#### 2.5 The 'Particle' Comparative

This is the familiar type of comparative construction from many Indo-European languages. The defining feature is that if the standard is an NP, the NP agrees in case with the comparee NP. This distinguishes the type from the separative, allative, and locative comparatives, where the standard NP has a specific 'fixed' case regardless of the case of the comparee NP. The more common type of Latin comparative is a good example:

- Equ + us est maior quam vir (30)  
 horse + NOM is bigger PARTICLE man + NOM  
 'The horse is bigger than the man'  
 Dixit vir + um esse maiorem quam  
 equ + um  
 He said man + ACC be bigger PARTICLE  
 horse + ACC  
 'He said the man was bigger than a horse'

(author's examples). English might be described as an example of this type, though sentences with a standard NP in the nominative (such as *John had more success than I*) are arguably rather marked.

The variability of the case of the standard NP means that the particle which governs it in this type of construction cannot be regarded as any kind of adposition or case marker. Indeed, it is often the same particle as introduces subordinate clauses, as in:

## Comparative Constructions

ALBANIAN:

Tha se vjen  
He said PARTICLE he comes  
'He said that he will come'  
Hekuri asht ma i rande se guri  
the iron is more the heavy one PARTICLE stone  
'Iron is heavier than stone'

(31)

A language can also use for a comparative particle a word which is also a coordinating conjunction, or a relative pronoun, or a word which also means 'like' or 'as'; not forgetting those languages which have a more or less exclusive word for the purpose like *quam* or *than*.

This type of comparative is very likely, and is the only type that is likely, to have a 'comparative marker' analogous to English *more* or *-er*. The Latin suffix *-or* exemplified above is such a marker, for example, as is French *plus*, German *mehr*, etc.

### 2.6 Defining 'Comparative Construction' Crosslinguistically

The query which hangs over the type of crosslinguistic study of comparatives which has been done to date is one of definition: what counts as a comparative construction? Is like being studied alongside like?

The English *more ... than* construction is a 'comparative construction.' That is, it has morphosyntactic peculiarities, such as being discontinuous, and being associated with both adjectives and nouns, which only occur together in a few constructions used exclusively to express comparative meaning. Linguists can disagree about what the crucial characteristics are and exactly what the set of comparative constructions is without vitiating this point. Are exceed comparatives and conjoined comparatives comparative constructions in the same sense? Probably not, at least in most cases. For instance, it seems unlikely that there is any syntactic peculiarity about a clause containing a subordinate clausal modifier (one case of the exceed comparative), or about a pair of conjoined clauses, which only surfaces in the expression of comparative meaning. It would seem more likely that in most cases these constructions are just *ways of expressing comparative meaning*.

So, is the field of study really 'ways of expressing comparative meaning'? For Andersen (1983), it clearly is: he counts English *superior to* and German *übertreffen*, 'surpass,' as 'comparatives.' But in that case the field is surely intractably large and ill-defined, covering uses of English *above* (*John's intelligence is above mine*), the genitive (*I am ten years John's senior*), and many other things which Stassen and Andersen do not treat.

Note that Andersen's use of semantic information is different from the normal typological use of it. For example, when identifying subjects across languages typologists separate some morphosyntactically defined entity in each given language, for example, the

entity with which the verb agrees. Semantics comes in at the point of crosslinguistic identification: one can call this item a subject because, say, it expresses the active participant of an action verb. (See Croft 1990: 18–25 for some discussion.) In Andersen's approach, semantic information is used to identify comparative constructions monolingually. To an uncertain extent, the same appears to be true of Stassen's work.

It would appear to be impossible in the extant typological work for a language to be regarded as having no comparative construction (except in the improbable event of it being unable to express comparative meaning). This is in particularly sharp contrast to the broad crosslinguistic study of tense in Comrie (1985). Comrie distinguishes between the concepts 'tense' and 'expression of time meaning,' thus making it logically possible that a language might have no tense (and indeed Comrie argues that some of the languages studied have no tense). This consideration and the other reservations just expressed mean that the extant typological work on comparatives has to be approached with a certain suspension of disbelief, at least initially.

### 3. Comparatives in Linguistic Theory

Early theoretical discussion of the English comparative construction established a concern with so-called 'subdeletion' examples, such as

The desk is longer [than it is wide] (32)

(See Grimshaw (1987) and McCawley (1988: vol. 2, chapter 20) for later resumptions of the discussion). Part of the interest of such examples lies in their being at the limit of possibilities for ellipsis. The comparative clause is almost a complete clause: the only element which might be seen as being elided is a degree marker for the adjective (*wide* in (32)). If such a marker is added, the example becomes unacceptable:

\* The desk is longer [than it is somewhat wide] (33)

Early discussion also focussed on the possible configurational relationships between the comparative predicate and the adjective in the standard of comparison (to use the terminology of section 2) in such examples. The comparative clause can be multiclausal:

The desk is longer [than Jane said [sJoan thought [sit was wide]]] (34)

However, a so-called 'Complex NP' configuration may not intervene between the two adjectives:

\*The desk is longer [than Jane reported [NPJoan's claim [s[that it was wide]]] (35)

The reduction of these restrictions to parallel restrictions on relative clauses was something of a *cause célèbre* (see Newmeyer (1986) for a historical account).

Recent theoretical discussion countenances the possibility that the Logical Form (LF) level of representation may contain lexical material which is

elided in the observed sentence (the Phonetic Form or PF). Although more attention has been paid under this heading to copies of moved constituents, copies which may remain in LF but be deleted in PF, the possibilities for ellipsis in comparative constructions have been exploited by Hazout (1995). The latter is an account of Modern Hebrew comparatives: however, the following possible representation for an elliptical English comparative construction captures its spirit:

- PF: June has more friends than enemies (36)  
 LF: more [June<sub>i</sub> [friends<sub>j</sub> [IP<sub>t<sub>i</sub></sub> has t<sub>j</sub>]]] than [enemies<sub>k</sub>  
 [IP<sub>t<sub>i</sub></sub> has t<sub>k</sub>]]]

In the PF, *June has* is elided in the comparative clause. In the LF, *has* is restored by copying its whole clause or IP into a suitable position, after which operation *June* is represented by its second trace. Needless to say, this brief report is nowhere near doing justice to the details of Hazout's account, to which the reader is referred.

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## Concessive Clauses

E. König

Together with terms like 'temporal,' 'conditional,' 'causal,' 'instrumental,' and 'purposive,' the term 'concessive' belongs to the terminological inventory that traditional grammar makes available for the characterization and classification of adverbial clauses and adverbials in general. Concessive clauses are separately identifiable on formal grounds in a wide variety of languages, but many other types of adverbial clauses may also have a concessive use. As one type of adverbial clause, concessive clauses share numerous syntactic properties with conditional, temporal, causal, and purposive clauses, from which they are mainly distinguished on the basis of semantic criteria. They also manifest, however, specific formal properties, which will be the main focus of this article. Certain aspects of the meaning and use of these constructions will also briefly be discussed.

### 1. Meaning and Syntactic Properties

In uttering a complex sentence with a concessive clause, i.e., a sentence of the type *Even though p, q* (e.g., *Even though it is raining, Fred is going out for a walk*), a speaker is committed to the truth of both clauses *p* (*It is raining*) and *q* (*Fred is going out for a walk*) and asserts these two propositions against the background of an assumption that the two types of

situations, *p* and *q*, are generally incompatible. This background assumption or presupposition can roughly be described as follows: if '*p*,' then normally not-'*q*.' ('If it is raining, one normally does not go out for a walk.')

Concessive clauses generally occur in all positions where adverbial clauses are permitted in a language. In English, for example, they may either precede or follow the main clause. Concessive clauses differ, however, from other types of adverbial clauses in a number of ways:

- In contrast to most other types of adverbial clauses, there does not seem to be a concessive interrogative adverb in any language, analogous to English *when*, *where*, *why*, *how*, etc.
- Concessive clauses cannot be the focus of a focusing adjunct (focus particle) like *only*, *even*, *just*, *especially* (cf. *Only because it is raining vs. \*Only although it was raining ...*).
- Concessive clauses cannot occur as focus in a cleft sentence (*\*It was although it was raining that ...*).
- Concessive clauses cannot be the focus of a negation or a polar interrogative (cf., *Was he harassed because he was a journalist? vs. Was he harassed although he was a journalist?*).



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All of these divergent properties seem to be manifestations of a single syntactic constraint on the use of concessive clauses: they cannot be focused, a property which they share with causal clauses introduced by *since* and resultative clauses introduced by *so that*. This constraint with regard to focusability is generally taken to indicate that the relevant clauses are less tightly integrated into a main clause than other types of adverbial clauses. Whether this constraint is also a sign of greater semantic complexity relative to other types of adverbial clauses is not so clear. A certain support for the assumption that concessive constructions are especially complex semantically can be derived from the fact that they develop relatively late in the history of a language and are also acquired much later than other types of adverbial clauses.

### 2. Concessive Connectives

Concessive relations between two clauses or between a clause and an adverbial are not only expressed by conjunctions like *even though* and *although* in English, but can also be signaled by prepositions like English *despite*, *in spite of*, and by conjunctive adverbs like English *nevertheless*, *still*, etc. The near-synonymy of the following constructions shows that the term 'concessive' is applicable to all three groups of 'connectives' and that the selection of a specific subcategory depends on the syntactic environment: *Fred is going out for a walk although it is raining.*—*Fred is going out for a walk in spite of the rain.*—*It is raining, Fred is still going out for a walk.* A cross-linguistic investigation of all three types of concessive connectives provides interesting information on the affinity between concessivity and other semantic domains and on the historical development of concessive connectives. Such a comparison shows that concessive connectives are typically composite in nature (e.g., *al-though*, *never-the-less*) and that in most cases earlier and more basic meanings can easily be identified for these components. These earlier meanings as well as the other uses of the components that enter into the formal make-up of concessive connectives provide important insights into the relatedness of concessivity to other semantic domains. Five different types of connectives can be distinguished on the basis of their etymology and their historical development:

- (a) Members of the first group derive from such notions as 'obstinacy,' 'contempt,' 'spite,' from notions that is, originally applicable only to human agents or experiencers. Examples are English *in spite of*; Spanish *a pesar de* (cf., *pesar* 'sorrow, regret'); Dutch *ondanks* ('ingratitude, thoughtlessness'); Finnish *huolimatta* ('heedless, careless').
- (b) Second, there is a close relationship between concessivity and free-choice quantification as

expressed in English by *any* or *whatever*. In a wide variety of languages, concessive connectives contain a component that is also used as a free-choice quantifier: English *albeit*, *however*, *anyway*; Latin *quamquam*; Hungarian *habár* (cf., *ha* 'if'; *ki* 'who'; *bárki* 'whoever').

- (c) In many languages concessive connectives are composed of an originally conditional or temporal connective (e.g., French *quand*) and/or an additive focus particle like English *also*, *even*. This type, probably the most frequent in the world's languages can be exemplified by English *even though*; German *wenn...gleich*; and Bengali *jodi-o* 'if-also.'
- (d) Concessive connectives may also derive from expressions originally used for emphatic affirmation. Expressions with the original meaning 'true,' 'indeed,' 'fact,' or 'well' are frequently grammaticalized as concessive connectives. English *true*; German *zwar* ('it is true'); Bahasa Indonesian *sebenarnya*, 'true-even'; as well as Mandarin *gúrán* 'of course, true, to be sure' are cases in point.
- (e) Members of the fifth type all derive from expressions originally used to assert remarkable co-occurrence or coexistence in some form or another. This type is exemplified by English *nevertheless*, *notwithstanding*, *still*; French *n'empêche que* ('does not prevent'); Turkish *birlikte* 'together with this'; Hopi *naama-hin* 'together thus.'

As is shown by this typology, the historical development of concessive connectives and the original, or at least earlier, meaning of their components directly reflect various aspects of the meaning of these connectives: the factual character of these constructions, the presupposition (or 'implicature') of general dissonance or conflict between two situation types and the remarkable fact of their co-occurrence in specific instances. Moreover, this typology also reveals a close relationship between concessive constructions and certain types of conditionals.

### 3. Relationship to Other Types of Adverbial Clauses

Further insights into the form and meaning of concessive constructions can be gained by comparing them to and delimiting them from other types of adverbial clauses, notably conditionals and clauses of cause and reason. As already mentioned, concessive clauses are closely related to certain types of conditionals and frequently derive from such conditionals. In a wide variety of grammar handbooks and specific analyses of the relevant area, both traditional and modern, the following sentence types are also discussed under the heading 'concessive': *Whatever his prospects of finding a job are, he is going to marry Susan next month.*—*Whether or not he finds a job, he is going to marry Susan next month.*—*Even if*



he does not find a job, he will marry Susan next month. A closer look at these sentences reveals, however, that they are basically conditionals. Where they differ from standard forms of conditionals (if *p*, then *q*) is the nature of the antecedent. Instead of relating a simple antecedent to a consequent, as standard conditionals do, the 'concessive conditionals,' as they are also and more appropriately called, relate a series of antecedent conditions to a consequent ('he will marry Susan next month'). This series of antecedent conditions can be expressed by a quantification (e.g., *wh-ever*), by a disjunction ('*p* or not *p*') or by a scalar expression that denotes an extreme (e.g., highly unlikely) value on a scale. If the conditional is asserted to be true for this extreme (unlikely) case, it may also be taken to be true for less extreme cases. In addition to being similar to standard conditionals, these 'concessive conditionals' also share certain properties with the factual conditionals discussed so far. In each of the three types of concessive conditionals, a conditional relation is asserted for a series of antecedents that includes an unlikely and thus remarkable case and it is this dissonance and conflict which has also led to labels like 'unconditionals,' 'irrelevance conditionals,' 'hypothetical concessives,' to mention only the most frequently used. In order to draw a clear terminological distinction between the factual concessive clauses introduced in English by *although* or *even though* and the three types of conditionals under discussion, it seems advisable to reserve the term 'concessive' for the former and to use the label 'concessive conditionals' for the latter.

Concessive conditionals with focus particles, i.e., conditionals of the type *even if p, q* are particularly difficult to keep apart from factual concessive clauses. In the core cases the distinction seems to be clear enough: the distinction is expressed by the connective (e.g., English *even if* vs. *even though*, Japanese *temo* vs. *noni*), by the mood (subjunctive vs. indicative) of the adverbial clause (e.g., Spanish *aunque llueva* 'even if it rains' vs. *aunque llueve* 'even though it is raining) or by some other inflectional contrast marked on the verb. The boundary between these two types of constructions, however, seems to be a fluid one in a wide variety of languages. In many, and perhaps all languages, concessive conditionals with focus particles can be used in a factual sense, i.e., in exactly the same way as genuine concessive clauses (e.g., English *Even if he IS my brother, I am not going to give him any more money*). Furthermore, as pointed out above, concessive conditionals with focus particles frequently develop into genuine concessive constructions. English *though*, for instance, was still used in the sense of 'even if' at the time of Shakespeare, as the following quotation from Hamlet shows: *I'll speak to it though hell should gape and bid me hold my peace*. In Modern English, by contrast, *though* is

only used in a concessive sense, apart from certain relics like *as though*. The fact that in some languages (e.g., French) the subjunctive is used in standard concessive clauses (i.e., after *bienque, quoique*) is a further indication of such developments from conditionals, for which the use of the subjunctive is more clearly motivated.

Sentences with concessive clauses have always been felt to be related to, and in fact to be in some way opposed to, clauses of cause and reason. This intuition is most clearly reflected in terms like 'anticausal,' 'incausal,' 'inoperant cause,' etc. that have often been proposed as more suitable replacements for the traditional term 'concessive.' There is good evidence, at least for standard uses of concessive and causal constructions, that this relationship of opposition is best analyzed as a specific manifestation of duality, i.e., of a semantic relation that structures important parts of the lexicon in natural languages. The semantic relation of duality can be found whenever there are two independent possibilities of negating a sentence: an external negation that relates to the whole of the sentence and an internal negation that affects only a clause that is part of a sentence. Such a contrast obviously exists for all sentences with adverbials, with quantifiers and with modal verbs. Two expressions *a* and *b* stand in this relation of duality if the external negation of a sentence with *a* is equivalent to the internal negation of a sentence with *b*, and vice versa. That the external negation of a causal construction may in fact be equivalent to a concessive construction with a negated main clause is shown by the equivalence of the following pair of sentences: *This house is no less comfortable because it dispenses with air-conditioning. This house is no less comfortable, although it dispenses with airconditioning*. In the first sentence, which is to be read as one tone group, the negation affects the whole sentence ('It is not the case that this house ...'). In the second example, by contrast, only the main clause is negated and it is exactly in such a situation that a causal construction may be paraphrased by a suitably negated concessive one.

#### 4. Types of Concessive Clauses

Under the right contextual conditions, many types of adverbial clauses may receive a concessive interpretation:

- (a) temporal clauses (*There was a funny smile on D.'s face as if D. were pulling his leg by pretending to fall in with his plan, when he had not the least intention to fall in with it*. P. Highsmith),
- (b) comparative clauses (*Poor as he is, he spends a lot of money on horses*),
- (c) conditionals (*If the aim seems ambitious, it is not unrealistic*), concessive conditionals, etc.

These interpretations are, however, the result of certain processes of interpretative enrichment on the

basis of contextual inferences and none of the relevant clauses would be considered as a concessive clause. Concessive clauses, identifiable as a separate category in numerous languages on the basis of the formal properties discussed above, are never augmented in their interpretation in this way and thus seem to constitute an endpoint beyond which such interpretative processes never go.

So far, concessive constructions have only been distinguished from other types of adverbial clauses, especially from concessive conditionals, but no further distinctions within that category itself have been drawn. It is now time to give up the tacit assumption that all concessive connectives and all types of concessive clause-linking are interchangeable and to introduce at least some of the distinctions frequently drawn in the relevant studies of European languages.

Not all concessive constructions licence the inference that the two sentences asserted to be true are instances of situations that do not normally go together. In many cases it is not the factual content of the two clauses that is incompatible. The incompatibility may lie in the conclusions or arguments which are based on these assertions. Such rhetorical concessives—as they are often called—are typically introduced by a connective of type (d) and/or by the adversative conjunction *but* and may thus be indistinguishable from adversative sentences (*True he is still very young, but he has proved very reliable so far.*) In English the modal verb *may* is another frequently used indicator of this type of concessive construction, but *although* and *though* may also be used in this function (*He may be a professor but he is an idiot.*) Sentences of this type are used to concede the first assertion and to emphasize the second. It is for these constructions that the term 'concessive' is particularly appropriate. Another subtype of concessive clauses that is frequently singled out in descriptions of European languages is the so-called 'rectifying' concessive clause (e.g., *Yes, it has come at last, the summons I know you have longed for. I, too, though it has come in a way I cannot welcome.*) Whereas in the standard case the content of the main clause is emphasized and made remarkable through the addition of the concessive clause, the content of the main clause is weakened whenever a rectifying clause follows. In English such rectifying clauses are marked by *although*, *though*, or *but then*, in French *encore que* invariably indicates such a function of weakening the import of a preceding assertion. Concessive clauses of this type always follow the main clause and are only loosely linked to that main clause. Moreover, they typically exhibit main clause word order in those languages where main and subordinate clauses are distinguished on the basis of word order (German *Er wird das sicherlich akzeptieren, obwohl bei ihm kann man das nie wissen.* 'He will

certainly accept that, although you never know with this guy.').

What such discussions about subdivisions within the class of concessive clauses and adverbials clearly show is that one cannot assume synonymy for all the concessive connectives that a language has at its disposal. Concessive prepositions (*despite*, *in spite of*) and certain conjunctions (e.g., English *even though*) are not used in a rectifying or rhetorical function, some conjunctions (like French *encore que*) are exclusively used for rectification, still others (e.g., English *although*) can be used in all functions. What is also clearly revealed is that different subtypes of concessive clauses manifest different degrees of subordination to and integration into a main clause. It has already been mentioned that concessive clauses are not focusable—even in their standard use—and tend to take wide scope over any operator in the main clause. They are therefore assumed to be less tightly integrated into a main clause than conditional, temporal or causal clauses. Rectifying concessive clauses are even more loosely linked to a main clause: they can only follow the main clause and typically exhibit main clause word order in languages like German. Rhetorical concessive clauses, finally, bear every hallmark of straightforward paratactic constructions.

See also: Conditionals, Grammatical; Adverbs and Adverbials.

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## Conditionals

F. Veltman

In making plans, in evaluating actions, in justifying beliefs as well as in theorizing, hypothetical situations or deliberate counterfactual possibilities are frequently considered. Conditionals directly reflect this ability to reason about alternative situations. They consist of two constituents, the first of which is called the 'protasis' or 'antecedent' and the second the 'apodosis' or 'consequent.' The antecedent expresses what is hypothetically (counterfactually, possibly,...) so, while the consequent states what, given this condition, will be (would have been, might be,...) the case. See examples (1–2):

If Shakespeare didn't write Hamlet, someone else did. (1)

If Shakespeare hadn't written Hamlet, someone else would have. (2)

This pair of examples illustrates the contrast between indicative conditionals and counterfactuals. The first conditional (1) is obviously true. Given that the play Hamlet does in fact exist, and given the way plays come into existence, somebody must have written it. If not Shakespeare—and the use of the indicative suggests that we have to reckon with this possibility—it must have been somebody else. The use of the pluperfect in (2), however, strongly suggests that Shakespeare did in fact write Hamlet. And it is very difficult to give up this idea, as the antecedent of this counterfactual invites one to do, without giving up the idea that it was written at all. So, (2) seems downright false. This article is confined to general properties of conditional sentences and theories of indicative conditionals, and mentions counterfactuals only occasionally (see *Counterfactuals*).

### 1. Conditional Markers

Every language has some way of forming conditional sentences. Descriptive studies of the range of forms used by native speakers to express conditionals show that these forms can be substantially different from the *if-then* construction, which is prototypical for English. There are even languages in which there is no clear prototypical construction at all. In Chinese, for example, most conditional sentences have the form of a conjunction, and their conditionality has to be read off from the context. In Latin, by contrast, the *si* unambiguously marks conditionality. In Classical Arabic there are two prototypes: *in* for expressing indicative conditionals, and *law* for counterfactual conditionals. A still more elaborate system can be found in Classical Greek in which even the degree of hypotheticality is sharply characterized. Although in English the *if-then* is the clear-cut mark

of conditionality, neither the *if*, nor the *then* is necessary; *Tell him a joke, and he will laugh* expresses the same conditional as does *If you tell him a joke, he will laugh*. And in the sentence *No cure, no pay* mere juxtaposition suffices to enforce a conditional reading.

On the other hand, the occurrence of syntactic markers of conditionality is not a sufficient reason for conditionality either. A sentence like *I paid you back, if you remember* is generally considered not to be a real conditional sentence; for here the speaker is committed to asserting the consequent outright—not *if* something else is so.

The question as to the various means by which native speakers express conditionals is of considerable interest not only to the descriptive, but also to the historical studies of conditionals. In the latter tradition the main objective is to gain insight into the processes by which conditionals come to be expressed in new ways and how they come to express new functions. Traugott (1985) suggests the following set of nonconditional sources of conditional markers: (a) modals of possibility, doubt, and wish; (b) interrogatives; (c) copulas, typically of the existential kind; (d) topic markers and demonstratives; and (e) temporals. How could the change from any of these sources to conditionals take place? As already indicated above, the antecedent of a conditional raises the possibility of some alternative situation, which is subsequently treated as a conditional constraint on the consequent. It seems plausible that such alternative situations were originally indicated by the diacritics listed above, which then came to be the conventional means for expressing the fact that a conditional constraint was posited.

### 2. Truth Conditional Semantics

In the logical-philosophical tradition the problem of conditionals is addressed by abstracting away from the way conditionals are expressed in everyday language. Here the aim is to give a systematic account of their logical properties.

#### 2.1 Material Implication

The oldest theory of conditionals states that *if... then* is just the so-called material implication. According to this theory, first proposed by the Megarian Philo (fourth century BC), a conditional sentence is true if and only if its antecedent is false or its consequent is true:

*If p then q* is true if and only if *p* is false or *q* is true. (3)

In introductory logic courses this truth condition is

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usually motivated by pointing out that classical logic leaves one with no alternative. Given that the language of classical logic is truth-functional, and that within this framework every sentence has exactly one of the truth values 'true' and 'false,' there is just no room for *if ... then* to mean anything else than (3) says.

This motivation will only appeal to those who, for some reason or other, believe that classical logic is the only correct logic. Others might prefer the conclusion that natural language conditionals cannot properly be analyzed within the framework of classical logic. There are strong arguments in favor of this position. For example, within classical logic the propositions  $\neg(p \rightarrow q)$  and  $(p \wedge \neg q)$  are equivalent. But the following two sentences clearly are not:

It is not true that if you study hard, you will pass your exam. (4)

You will study hard, and you will not pass your exam. (5)

Sentence (4) does not say that it is in fact the case that the antecedent of the conditional is true and its consequent false (as (5) wants to have it), but at best that this is possibly so.

### 2.2 Strict Implication

Examples like the above naturally lead to the idea that the *if ... then* of natural language is a strict implication rather than the material one. The example suggests that a conditional sentence is false if it is *possible* for its antecedent to be true while its consequent is false. By adding to this that it is true otherwise one gets:

*If p then q* is true iff it is necessarily so that *p* is false or *q* is true. (6)

Restated in the language of possible worlds semantics this becomes (7):

*If p then q* is true if *q* is true in every possible world in which *p* is true. (7)

There are various ways to make this truth definition more precise, depending on how one interprets 'possible.' But whatever interpretation one prefers—logically possible, or physically possible, or whatever else—difficulties arise. The theory of strict implication runs into similar problems as the theory of material implication by validating patterns of inference of which it is not immediately evident that they accord with the actual use of conditionals. One such pattern is the principle of 'strengthening the antecedent.' As a counterexample against the latter, one could suggest that from (8):

If I put sugar in my coffee, it will taste better. (8)

it does not follow that (9):

If I put sugar and diesel oil in my coffee, it will taste better. (9)

An analysis of this example along the lines suggested by (7) yields, however, that this argument is valid. Hence (7) calls for refinement.

### 2.3 Variable Strict Implication

The next truth condition was first proposed in the late 1960s by Robert Stalnaker (10):

*If p then q* is true if *q* is true in every possible world in which (i) *p* is true, and which (ii) otherwise differs minimally from the actual world. (10)

It is easy to see how this amendment to (7) blocks the inference from *If p, then r* to *If p and q, then r*. Consider the set *S* of worlds in which (i) *p* is true and which (ii) in other respects differ minimally from the actual world. It could very well be that *q* is false in all these worlds. If so, the set *T* of worlds in which (i) both *p* and *q* are true, but which (ii) in other respects differ minimally from the actual world will not be a subset of *S*. So, *r* could be true in every world in *S*, but false in some of the worlds in *T*.

Definition (10) is the heart of what is the most popular theory of conditionals. But it is not generally accepted. Not impressed by the examples cited above (which are due to Stalnaker), many logicians still believe that at least indicative conditionals can be properly interpreted as material or as strict implications. For example, a defender of the idea that indicative conditionals are strict implications will argue that the oddity of the diesel oil example is easy to explain away using Grice's theory of conversation. (Roughly: It is a conversational implicature of the conclusion that the coffee may well contain diesel oil. But given this possibility, the premise is false. Hence, the argument in question is pragmatically unsound.) And not only pragmatic arguments are invoked; people resort to syntactic arguments, too. For instance, a defender of the material implication might argue that negations of whole conditional statements, being rare in English, have an idiosyncratic interpretation: it is not a real negation, but something weaker than that. Therefore, it is wrong to translate (1) with a formula of the form  $\neg(p \rightarrow q)$ .

### 3. Other Approaches

It is typical for the field of conditional logic that there is no consensus as to what form a semantic theory should take. The theories mentioned so far all supply truth conditions, and, according to the majority of logicians, who take the classical standard of logical validity—preservation of truth—as the starting point of their investigations, that is what a semantic theory should do. But according to the relevance logicians (see Anderson and Belnap 1975) truth preservation is at best a necessary condition for the logical validity of an argument, but it is by no means sufficient. The premises of the argument must in addition be relevant to the conclusion. According to Adams (1975) the



proper explanation of validity is to be given in terms of probability rather than truth.

The epistemic turn in semantics during the early 1990s has given rise to yet another notion of validity. On the dynamic view, knowing the meaning of a sentence is knowing the change it brings about in the information state of anyone who wants to incorporate the news conveyed by it. What matters is not so much what a sentence says about the world, but how it affects the information an agent has about the world. Accordingly, attention has shifted from 'truth' simpliciter to 'truth on the basis of the information available.'

As for conditionals, the main advantage of this approach is that more justice can be done to their highly context-dependent nature. They express constraints on how information states can grow. By accepting an indicative conditional *If p, then q*, the possibility is excluded that one's information state may develop into a state in which *p* is true on the basis of the available information but *q* is false. Unlike purely descriptive sentences indicative condi-

tionals are not 'stable' under growth of information: *If p, then q* may be false on the basis of limited information (simply because it is not yet possible to rule out the possibility that *p* will turn out true while *q* will turn out false), and become true when more information comes at hand. Many of the logical peculiarities of conditional sentences are directly related to this instability.

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## Conditionals, Grammatical

J. Haiman

'Conditional', or 'if-clauses', differ from other adverbial clauses of circumstances chiefly by virtue of having been adopted for special treatment by logicians. The logicians' hook has been associated with 'and,' 'or,' and negation as one of the handful of primitive semantic operators on sentences, and have elevated the 'if' clause to a suitable subject of study for philosophers and psychologists, as well as linguists.

Nevertheless, the conditional protasis clause has much more in common with traditional adverbial clauses of circumstance.

### 1. The Logicians' Hook

The truth-functional definition of the hook says: a compound statement  $A > B$  is true unless  $A$  is true and  $B$  is false. The gulf between ordinary language conditionals and conditionals defined by 'material implication' is well-known (for discussion, see Goodman 1965; Geis and Zwicky 1971), but there are two important truths about the ordinary language connective 'if' that this definition correctly captures:

- (1a) unlike the negative operator, but like both 'and' and 'or,' the hook *connects two statements*. Both  $*A >$  and  $* > B$  are ill-formed.
- (1b) unlike the other sentence connectors, the hook

is asymmetrical. The statement  $A > B$  is not the same as (has different truth conditions from) the statement  $B > A$ . The statement which precedes the hook is assigned primacy.

Ordinary language definitions of conditional sentences reflect the logical notion of material implication in two ways. Two assumptions in much of the literature on these constructions are that:

- (2a) the conditional protasis is a *dependent* clause: sentences like  $*\text{'If } S\text{'}$  are ill-formed. Conversely, in the minority of languages where the apodosis alone is marked, sentences like  $*\text{'then } S\text{'}$  are equally elliptical.
- (2b) the relationship of protasis to apodosis is roughly analogous to the asymmetrical relationship between cause and consequence. The protasis is a *cause clause*, and the primacy of the protasis reflects the primacy of cause over effect.

To these, the ordinary language investigators, grammarians like Jespersen (1928), have added a third defining property of conditional sentences which the formal definition utterly fails to characterize, namely that:

- (2c) the protasis is *hypothetical*.



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For a neat conflation of all of these assumptions into a single (mathematician's) definition of the ordinary language conditional, cf. the claim by Ramsey (1931: 248), that 'If A, B' and 'Because A, B' differ only in that the former is hypothetical.

Properties (2b and c) do indeed hold for a large number of conditional constructions: but they certainly do not hold for all of them, and even (2a) is in this (essentialist) sense incorrect. All of them will fail to characterize, exclusively and exhaustively, constructions which share the morphological and syntactic properties of if-clauses and their equivalents in other languages. The prototypical conditional protasis will have a fourth property:

(2d) The protasis proposition functions as the topic of the sentence in which it occurs.

A great many clauses with the formal properties of if-clauses will fail to satisfy (2a), (2b), or (2c), but be eligible for conditional status by virtue of satisfying (2d). No clause that fails to satisfy at least one of these criteria will have the superficial form of a conditional clause.

## 2. Ordinary Language Conditionals

A dusty old Spanish textbook contains the following humorous anecdote. A man walks into a restaurant and orders a bottle of wine. After it is brought to his table, he changes his mind, orders a couple of fried eggs and potatoes instead, eats them with gusto, and tries to walk out without paying. The waiter stops him:

- Pague Usted la comida, amigo. (1)
- ('Pay for the meal, my friend.')
- ¡Pero si la cambie por la botella de vino!
- ('But if I exchanged it for the bottle of wine!')
- Entonces pague la botella de vino.
- ('Then pay for the bottle of wine.')
- Pero, hombre, si no la tome!
- ('But, man, if I didn't take it!')
- Es verdad, es verdad.
- ('True, true.')

(For the sequel, cf. Pittaro 1938: 132)

The if-clauses in the dialog here are each independent, and hence can assert no cause-consequent relationship with any possible consequent. Moreover, since the fact has been established that the actions described in the two if-clauses both actually occurred, the protasis in each case is anything but hypothetical. It could be argued, of course, that the protasis clauses in the dialog (1) are elliptical, and that an *understood* consequent is something along the lines of 'How can you ask me to pay?' But this supplied apodosis is by no means necessary for the understanding of the sentence and no exegesis is going to make the protasis hypothetical. In fact, it is clear to all readers, whether they know Spanish or not, that what the speaker is saying is nothing like 'Suppose S,' but rather something like 'It is obvious that S' (and saying it with some exasperation).

Example (1) offers a perfectly unexceptionable conditional clause which violates all the properties of (2a), (2b), and (2c), but satisfies (2d), in the sense that the topic is 'old information.'

### 2.1 The Cause-Consequence Relationship

There is undoubtedly a cause-consequent relationship between protasis and apodosis in the prototypical conditional wherein, in Strawson's words, 'the antecedent provides grounds for believing in the truth of the consequent' (Strawson 1952: 37; recall also the definition given by Ramsey 1931: 248). First, it is likely that the linear asymmetry of the clauses is in itself enough to account for the inference of logical consequence. 'If' does no more semantic work than 'and.' In most languages, the structure (2):

A (and) B (2)

may at least stand for the conditional 'If A, then B,' while there are many others in which the conditional can be expressed in no other way (for discussion of English threats and promises of the form 'A and/or B,' cf. Fillenbaum 1986; for neutral conditionals in a variety of languages, cf. Haiman 1983).

Second, it is remarkable that in many languages, conditional clauses and concessive conditionals (in English 'even if' clauses) are morphologically alike, or nearly so. While an ordinary conditional may function like (2), precisely the opposite relationship between antecedent and consequent obtains in concessive conditionals like those of (3):

Even if you lose, you'll have a good time. (3a)

Even if the weather changes, the race will go on. (3b)

The concessive nature of the protasis clause is admittedly marked by a special diacritic 'even' in (3), but this is by no means always the case in concessive conditionals. There are, for example, the concessive conditionals of (4) in which the noncausal connection between protasis and apodosis is perhaps typically, but by no means always, signaled by the inverted word order of the two clauses (4):

I'll get you if it's the last thing I do. (4a)

She wouldn't marry him if he were the last man on earth. (4b)

Greetings from your affectionate if absent minded son. (4c)

If I were on the rack, I wouldn't tell you. (4d)

Then there are the relatively marked but by no means uncommon given or 'resumptive' conditionals of (5) whose protasis is neither hypothetical nor causal:

If I was a bad carpenter, I was a worse mason. (5a)

If lexicostatistics can be usefully employed in Romance, I venture the prediction that its glottochronological accretion cannot. (5b)

If the content of his teaching at this time differed little from that of his own tutors, his manner certainly did. (5c)

If temporal sequencing is the most common relation associated with the use of 'and,' it is certainly not the only one. (5d)

But if Dallas compressed all the mysteries of the 1980 campaign into a single day, it also underscored the difficulties of analyzing what has happened to American politics in recent years. (5e)

But if Winpisinger was on the far left of the labor spectrum, his hatred of Carter was merely a particularly potent symbol of general resentment and disillusion ... (5f)

Haben wir bisher mit Lautwandlungen zu tun gehabt, die mehreren der Länder des Römischen Reiches gemeinsam waren, und sie in ihrer Ausdehnung umfaßten, so gibt es auch Entwicklungstendenzen, die auf einem ziemlich großen Gebiet in Fluß kommen, dann aber stehen bleiben und eine gewisse Grenze nicht mehr überschreiten. But if we have been dealing up to now with sound changes common to the entire Roman Empire, covering all its territory, there are also developmental tendencies, which are initiated over a fairly large area, but which nevertheless come to a halt, and progress no further over a certain boundary (5g)

In the sentences of (5), the protasis merely recapitulates a point which has been made in some detail in the immediately prior text. In each of the sentences of (3), (4), and (5), the consequent is asserted to be true in spite of what the antecedent would normally lead the hearer/reader to expect.

In fact, the mutual *independence* of the conditional construction and the cause-consequence relationship is neatly illustrated in the verbal morphology of Hua (and perhaps many other related Papuan languages). Here, the 'true conditional' construction may be, and generally is, paraphrased by the normal coordinate construction (1)—*except* where the relationship between protasis and apodosis is concessive, as it is in sentences like those of (3) and (4). Here and here alone, the 'true conditional' construction is *de rigueur* (cf. Haiman 1978, 1983).

## 2.2 The Hypotheticality of the Protasis

Example (5) demonstrates, *pace* Jespersen, that there are conditional protases which are not necessarily hypothetical, any more than they are causal. In each of these, the word 'if' could be replaced by 'granted that ... nevertheless.' The examples in the Spanish dialog (1) are similar in that the content of the *si* clause is not merely 'granted,' but stated as self-evidently true.

The most pervasive evidence that conditionals are not necessarily 'unreal' or hypothetical is the fact that in innumerable languages, the words for 'if' and 'when' are identical (cf. Traugott 1985; Comrie 1986).

## 2.3 The Dependence of the Protasis Clause

Excepting the Spanish dialog (1), there is apparently no evidence that the conditional protasis is ever anything but a dependent clause: the prototypical subordinate clause in many respects. This claim is the least frequently challenged: indeed, implicit in the discussion of the *nature* of the connection between protasis and apodosis in Sect. 2.1 is the assumption that a connection of some kind must exist, and that the protasis cannot possibly stand on its own. Nevertheless, what distinguishes conditionals of the form 'If A, B' from unmarked parataxis 'A B' or simple coordination 'A and B' is often their very *inconsequentiality*: 'Given A, so what?'

A number of Papuan languages, among them Usan (Reesink 1987), Tauya (MacDonald 1988), and Hua (Haiman 1988), have a special inconsequential form of the verb, which is either totally homonymous with the form of the verb of the conditional protasis or which can be substituted for it. The primary function of the inconsequential is to signal that the event described in it was performed without the expected or desired result, *and it may stand alone*. Typically, 'S + inconsequential' can be translated as 'S—in vain,' or 'S—so what?.' Thus, in Hua:

Hako - e. (6a)

I = searched (final)  
I searched for it.

Hako - mana. (6b)

I = searched (inconsequential)  
I searched for it—in vain.

How general this phenomenon may be, even among Papuan languages, remains to be seen. It is interesting that this usage, from an exotic corner of the map, should reflect something of the flavor of the conditionals in the little Spanish dialog in (7):

Si la cambie por la botella de vino! (7)

'(So what?) I exchanged it for the bottle of wine.  
(and nothing follows from that!)

## 3. Conditionals as Topics

Marchese (1977), and Haiman (1978), proposed that the conditional protasis, like many other subordinate clauses of circumstance, define a framework or set the scene within which the following sentence was either valid or felicitous. In this respect, the protasis functions as a topic in the sense of Chafe (1976). On the one hand, this definition claims far less for conditionals than the requirements of dependence, consequentiality, and hypotheticality, so the problematic examples discussed in Sect. 2 are not immediate embarrassments. On the other hand, the notion that the protasis must serve as a framework for the following sentence seems to capture an idea which the purely truth-functional notion of material implication entirely misses, an idea which is crucial particularly for

counterfactual conditionals, that the protasis and the apodosis must be mutually relevant in some way. Moreover, this definition is congruent with one of the most well-established universals of the conditional, that is, Greenberg's (1966) universal 14: the protasis almost invariably precedes the apodosis in the unmarked, or only permissible case, as the given precedes the new. It is also congruent with two widely noted, but otherwise inexplicable facts: the first is the widespread morphological and syntactic identity of the conditional and topic marker in a large number of unrelated languages; the second is the widespread interchangeability of the conditional marker and the polar interrogative marker.

The immediate relevance of the identity of topic marker and protasis is transparent. Clearly, if the protasis is typically a topic clause, then it is not surprising if there are languages like Hua, Turkish, or Vietnamese, where both are indicated by the same morpheme (Hua -mo, Turkish -sa, Vietnamese thi), or English, where both are treated as left-dislocations: for example, in both sentences (8) below the italicized word may be interpreted as a resumptive pronoun:

The one-1 lama, *he's* a priest. (8a)

If he's lying, *then* I'll never trust him again. (8b)

The definition also accounts directly for the resumptive function of the protasis clause in examples like those of (5).

The identity of topic markers and markers of the polar interrogative, illustrated in (9):

Had it been otherwise, I would have told you. (9)

as discussed by Jespersen, is only slightly less transparent. A topic is a given shared by both speaker and hearer, but it is normal for the speaker in practice to make sure of this shared given status by asking for the listener's assent. Thus, the interrogative intonation of English structures such as (10):

**Women? You can handle them.** (10a)

Europe? You've been there.

There's this girl in my class who flunked algebra  
16 times? (10b)

Well, she just proved Fermat's last theorem.

In effect, as Jespersen pointed out, interrogative intonation establishes a mini-conversation between speaker and hearer:

Speaker: 'X?' (11)

Hearer: {silence}, {murmur of assent}

Speaker: 'Y.'

Here, 'X' is established as a shared given by the hearer's silence or other signal of recognition.

Nevertheless, it would seem that to call a protasis a topic means the same as to call it the topic *of* some sentence, and deny the possibility of its acting as an independent utterance. Under normal circumstances, no sentence consists entirely of a topic, since the

purpose of communication is presumably to bring new material into the consciousness of the hearer. However, there may be circumstances where the speaker's intention is not to inform, but to remind. (For rhetorical purposes, the speaker may also smuggle new information into the discourse under the pretense that it is old.) This is exactly what the dead-beat in the Spanish dialog in (1) is doing: in uttering 'si S,' he is saying not only that 'S' is inconsequential, but that it is a self-evident fact, a given, or, in the traditional definition, of topic status. The parallel use of the potential topic marking suffix -mo (itself part of the conditional suffix -mamo) to signal exasperated repetition of self-evident facts in Hua is discussed in Haiman (1978). Basically, the suffix -mo occurs on nominal constituents, and on dependent adverbial clauses: it cannot occur on verbs which constitute complete independent utterances, *unless* these utterances are being repeated as self-evident facts that the listener should already know. Thus, in example (12):

(12a)

kmigu                      -e-(\*mo)  
'I = will = give = you (final)(potential topic)  
'I will give (it)            to you.'

(12b)

I = will = give = you (purposive) (potential topic)  
'I already said I will give it to you!'

In conclusion, a variety of morphological and syntactic facts call into question the traditional common-sense definitions of the conditional clause, but support the novel and initially counterintuitive definition proposed in this section. This definition has little interest for the formal logician or mathematician, whose hook is characterized by the properties (2a) and (2b) (see Sect. 1). Nevertheless, note how nearly the ordinary language definition of conditionals as topics coincides with another idea proposed by Ramsey (1931): to assess a conditional 'If a, b' add the antecedent 'a' to your stock of beliefs—that is, treat it provisionally as a given. Then, assess whether or not its consequent 'b' is true.

Needless to say, more than a single possible world is compatible with the adoption of a hypothetical assumption 'a.' Note the spectacular pairs of sentences (13) from Quine (1959, 1960):

If Caesar had been in command in Korea, he would (13a)  
have used catapults. (Caesar lived 2000 years ago)

If Caesar had been in command in Korea he would (13b)  
have used the atom bomb. (Caesar was a 'hawk')

If Verdi and Bizet had been compatriots, Bizet would have been an Italian. (Verdi was Italian) (13c)

If Verdi and Bizet had been compatriots, Verdi (13d)  
would have been a Frenchman. (Bizet was a Frenchman)

The arbitrarily selected defining property of the hypothetical world is indicated in brackets following each sentence.

Although logicians have been understandably intrigued by sentences of this sort (Quine even going so far as to wonder whether a 'coherent theory of the ... conditional ... is possible at all,' 1959: 5), it does not seem that the problem is particular to conditionals. Quine's 'problem' arises from the fact that, even in isolation, sentences like (14):

Verdi and Bizet were compatriots. (14)

are compatible with a host of possible worlds: they could both be Italian, French, German, Albanian, etc. More than one of these possible worlds can differ minimally from what the user knows to be actually true. Constructing such ambiguously defined worlds is easy, but ultimately a trivial and pointless exercise.

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## Connectives

J. Caron

The function of connectives in natural languages is to express various kinds of relations between utterances. At first view, most of these terms seem to fall under a purely semantic characterization: they denote factual relations (e.g., causal or temporal) between events or states of the world, or truth-functional relations between propositions (logical conjunction—*and*; disjunction—*or*; implication—*if*). However, a difficult problem is raised by the polysemy of those terms:

an account of the various meanings which they can take on in different contexts requires the introduction of pragmatic factors, involving the communicative aspects of utterances. But that raises the issue of the relationship between semantic and pragmatic aspects of meaning.

### 1. Polysemy

Polysemy has drawn particular attention to the case



of the seemingly logical connectives. Most uses of *if*, for instance, largely depart from the logical sense of material implication, and can express a temporal, causal, or even adversative relation, etc. The simplest way to deal with that problem is to consider that connectives have a unique meaning, reducible to their logical, truth-functional value, and that pragmatic factors come into play in a second round, after the purely semantic meaning of the sentence—(its ‘logical form’ or ‘literal meaning’) has been constructed, in order to adjust the interpretation to the contextual aspects of the communicative act.

A large number of classical cases can thus be handled by ‘conversational maxims,’ as described by Grice. For instance, *and* purely means the logical conjunction ( $p \wedge q$ ): but if the two events denoted by  $p$  and  $q$  cannot happen simultaneously (as the hearer knows from his or her general knowledge of the world), then the maxim of manner (‘be orderly’) induces a temporal interpretation (‘ $p$ , and after that,  $q$ ’), or even a causal one if the maxim of relevance requires it. Similarly, the conditional ‘*if*’ expresses the material implication ( $p \rightarrow q$ ), but the maxim of quantity leads sometimes to its being understood as a biconditional ( $\leftrightarrow$ ) (as in ‘If you mow my lawn, I’ll give you \$5’).

Conversational maxims can indeed deal with cases where something is added to the truth-functional value of logical connectives, as in the biconditional interpretation of *if*, or deleted, as in so-called ‘incomplete truth tables’. But in some cases, the meaning of connectives does not appear as truth-functional at all (as in contrastive uses of *if*, or in examples such as ‘If Peter wants to leave, he can’—cf. Austin 1956).

## 2. Semantic versus Pragmatic Aspects

Another possibility has then to be considered: if connectives sometimes bear on the propositional content of utterances, they may also sometimes bear on pragmatic aspects. Such an approach is illustrated by van Dijk’s distinction between ‘semantic’ and ‘pragmatic’ connectives (van Dijk 1979). Semantic connectives express a relation between facts; pragmatic connectives express relations between speech acts. For instance, in a sentence such as ‘If you are hungry, there is some ham in the fridge,’ the conjunction clearly does not express a condition for the second proposition to be true, but a condition under which the speech act would count (here as a permission). Many other examples could be accounted for in the same way, where connectives do not express truth relations between propositions, but relations of relevance between speech acts.

The problem is that both kinds of connectives happen to be expressed by the same linguistic markers. This may be, indeed, a matter of homonymy; but it is unlikely that such a coincidence would occur in many different languages in similar ways and for a

large number of connectives. It seems undoubtedly more sensible to distinguish between different uses of the same set of operators, but this interpretation involves important consequences. If the same operators can work at either a semantic or a pragmatic level, then the distinction between the two levels of interpretation (which is an essential tenet of truth-conditional semantics) becomes questionable: the semantic representation of an utterance must involve pragmatic information.

## 3. Argumentative Relations

A third move is possible, leading to a consideration of the meaning of connectives as essentially involving pragmatic features. Their primary function would then be not to denote factual relations between events, or states of the world, but to signal argumentative relations between speech acts. In such an approach, which is illustrated by the works of Ducrot (cf. Ducrot 1980), pragmatic aspects of utterances have to be conceived as an integral part of the latter’s meaning; and then, there is no principled distinction between semantics and pragmatics. For instance, the meaning of the conjunction *but* (French *mais*) can be described as follows: by saying ‘ $p$  but  $q$ ,’ the speaker means that, first, from the assertion of  $p$ , the hearer could infer a conclusion  $q$ ; and second,  $q$  is a stronger argument for not  $\neg p$ . So, the meaning of this connective cannot be analyzed without reference to the partners of the dialogue, and their mutual beliefs and expectations. Similarly, the various meanings of *if* can be explained on the basis of the general schema. First, imagine situation  $p$ ; second, in this frame, take  $q$  as relevant. Finally, this integration of the pragmatic aspects allows an explanation of the difference between particles which express the same (e.g., causal) relation between events, as in the French connectives *parce que*, *puisque*, and *car* (cf. in English *because*, *since*, and *for*).

Problems of polysemy can be easily handled in this frame; moreover, the category of connectives can be conceived in a unified way, since there is no difference in nature between ‘classical’ connectives and ‘conversational markers,’ as shown by the wide sample of French connectives studied by the Geneva school (Roulet 1987).

## 4. The Nature of Semantic Representation

The study of connectives thus raises the problem of the nature of semantic representation. The failure of truth-conditional semantics to give a comprehensive account of their meaning leads one to consider semantic and pragmatic aspects of meaning as closely interdependent. Both aspects can be defined in a formal way (cf. Culioli 1990). In such a view, the meaning of connectives has to be conceived as procedural rather than declarative. In other words, they do not denote some kind of relation between states of affairs but work as markers of cognitive operations,



and instructions for handling information. Along with linguistic analyses, psycholinguistic studies can provide useful insights into those procedures (cf. Caron 1987).

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## Constituent Structure

P. Jacobson

It has been widely claimed that a sentence of a natural language is not just a sequence of words, but that this sequence also has a structure—generally called the constituent structure of the sentence. After first developing this notion in a somewhat informal and intuitive way, this article turns to a variety of evidence for this claim. But while it is quite clear that a sentence has some kind of structure, there are several open questions and controversies surrounding the precise nature of this structure; some different (although closely related) approaches to sentence structure will be considered. The initial remarks will be developed using the assumptions and terminology of generative grammar, but most of the basic observations concerning constituent structure hold in other views of grammar as well. Indeed, the notion of constituent structure was first made explicit in works like Bloomfield (1933), Harris (1946), and Wells (1947), all of which predate generative grammar. The bulk of this article uses English and English examples to illustrate the points, turning briefly in the final section to the relevance of this notion for languages which are typologically quite distinct from English.

### 1. The Notion of Constituent Structure

The aim of this section is not to motivate the claim that sentences have a structure, but rather to present the basic idea and terminology as background for the remaining discussion. Thus, consider an English sentence like (1):

- Someone who knows everyone in the room said that (1)  
 Tom hates Bill.

In this sentence, the sequence *someone who knows everyone in the room* forms a unit; the sequence *everyone in the room* forms a unit within the larger unit *someone who knows everyone in the room*; the sequence *Tom hates Bill* forms another unit, and so forth. Each such unit is called a constituent. Since a single con-

stituent such as *everyone in the room* can occur within a larger constituent (here, *someone who knows everyone in the room*), the entire sentence has a hierarchical structure. Moreover, expressions like *Tom*, *Bill*, *someone*, *someone who knows everyone in the room*, *everyone*, *everyone in the room*, and *the room* are all units of the same type. What this means is that, roughly speaking, each of these could be substituted for any of the others and still yield a sentence, as in, for example, *Tom said that Bill hates everyone in the room*. Of course, some of these substitutions result in rather strange sentences (as in *The room said that Tom hates Bill*), but this sentence arguably does not violate any principle of English syntax, being strange only by virtue of facts about the world. One could, in fact, imagine a situation where this sentence made sense.

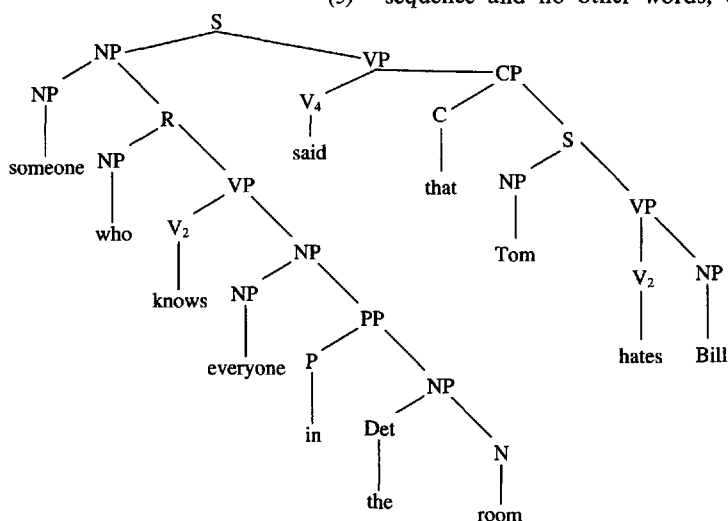
Thus the constituent structure of a sentence like (1) can be represented either as a bracketed structure shown below in (2) or as a tree as in (3). These two representations are merely different graphical conventions to represent the same information; in this article, both kinds of representations are used according to which is more convenient for the purpose at hand. Such representations both show the hierarchical structure and provide names for each constituent. The names themselves are arbitrary; the important point is simply that any two constituents of the same type will have the same name. Here, these constituents are labeled with names which are both mnemonic and relatively standard; the abbreviations in the representations in examples (2)–(4) can be read as follows: S = Sentence; NP = Noun Phrase; VP = Verb Phrase; PP = Prepositional Phrase; R = Relative Clause; CP = Complementizer Phrase (the symbol S' is also often used here); N = noun; Det = Determiner; C = Complementizer; P = Preposition. Moreover, while words like *die*, *kill*, *dash*, *say*, etc. are often all labeled V (for verb), these actually have somewhat different distributions: *die* is intransitive and occurs without

## Constituent Structure

any object; *kill* must be followed by an NP; *dash* must be followed by a PP; and *say* takes a sentential (or CP) object. Accordingly, different names are provided for these:  $V_1$  will refer to intransitive verbs like *die*,  $V_2$  to ordinary transitive verbs like *kill*,  $V_3$  to verbs like *dash*,  $V_4$  to verbs like *say* and *hope*, and so forth.

[S [NP someone] [R [NP who] [VP  $V_2$  knows] (2)

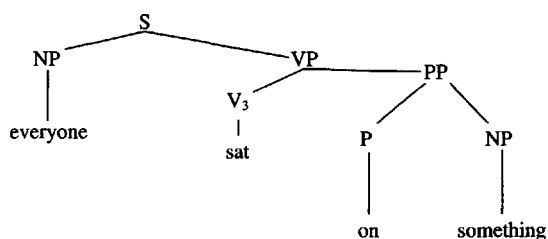
[NP [NP everyone] [PP [P in] [NP [Det the] [N room]]]]]  
[VP [ $V_4$  said] [CP [C that] [S [NP Tom] [VP [ $V_2$  hates] [NP Bill]]]]]] (3)



It should be noted that many of the details of these representations are unclear or controversial, but the aim here is simply to illustrate the basic notions rather than to justify these particular representations.

Before continuing, some terminology concerning trees will be useful. A tree is a sequence of points or nodes; in the trees used to represent constituent structure, each node has a label (such as NP, VP, etc.). A node A dominates a node B if there is a downward sequence of lines connecting A to B. (Under some definitions of 'dominates,' each node dominates itself; for convenience, 'dominates' is defined here in such a way that no node dominates itself.) For example, in the tree in (4), the node labeled VP dominates the nodes labeled  $V_3$ , PP, P, and the 'lowest' NP node:

(4)



The words themselves (also called the terminal elements) are also considered labels of nodes, and hence the node labeled VP in the tree in (4) also dominates the nodes labeled *sat*, *on*, and *something*. For expository ease, a node is henceforth referred to by the name of its label. A node A immediately dominates a node B if and only if A dominates B and there is no node C such that A dominates C and C dominates B. Consider any sequence of words in a sentence. If there is some node A which dominates each word in that sequence and no other words, then that sequence

forms a constituent. Thus, in (4), the whole sentence is a constituent; the sequence *sat on something* is a constituent; *on something* is a constituent, etc. However, *sat on* is not, for every node dominating these words dominates other words as well.

So far, only constituents of the whole sentence have been considered. However, since the constituent structure is a hierarchical structure, the constituents of smaller units can be considered as well. Thus, *on something* is a constituent of the whole S, but it is also a constituent of the VP *sat on something*. If a sequence of words *x* is a constituent of some larger sequence *y*, and if there is no other sequence *z* such that *x* is a constituent of *z* and *z* is a constituent of *y*, then *x* is an immediate constituent of *y*. Turning again to (4) this means that the immediate constituents of S are *everyone* and *sat on something*; the immediate constituents of *sat on something* are *sat* and *on something*, and the immediate constituents of *on something* are *on* and *something*.

## 2. Motivation

### 2.1 Distributional Considerations

The fundamental motivation for the notion of constituent structure was hinted at above: this centers on distributional facts. (Wells (1947) provides a classic and thorough discussion of this, although his

discussion is phrased in somewhat different terminology from that adopted here; see also Harris (1946).) The basic idea is perhaps easiest to illustrate with an artificial 'language.' One way to view a language is as a set of sentences, and so one can create a mini-'language' whose 'words' are *a, b, c, d, and e*, and whose 'sentences are only the following sequences of 'words': *abcab, adcab, edcab, ddecab, abcad, adcad, edcad, ddecad, abced, adced, edced, ddecad, abcdde, adcdde, edcdde, ddecdd*. Call this language  $L_1$ .  $L_1$  is, of course, not really analogous to a natural language in that it has only 16 sentences, but it will nonetheless serve to illustrate several points.

Consider how one could describe the sentences of this language. One way is simply to list them. But in fact there are simpler ways to characterize these 16 sentences. Not first that each sentence contains a *c*. Note further that immediately before the *c* can go any of the sequences: *ab, ad, ed, dde*, while immediately following the *c* can go any of the sequences *ab, ad, ed, dde*. The interesting point, then is that what can precede the *c* and what can follow it is the same set of sequences. This can be described by creating an arbitrary name for this set—call it *A*—and by stating that the strings of this language consist of an expression drawn from the set *A* followed by *c* followed by an expression drawn from the set *A*. To put this in slightly different terms, one can posit the existence of a grammatical category *A*, and specify that the sentences of this language consist of an expression of category *A*, followed by *c*, followed by an expression of category *A*. To complete the description one specifies that the expressions of category *A* are the sequences *ab, ad, ed, and dde*.

Before returning to natural languages, the notion of phrase structure rules will be discussed briefly, for the distributional facts which motivate the notion of constituent structure are intimately tied up with this notion. Much of modern grammatical theory (particularly within the tradition of generative grammar) treats a grammar of a language as a set of rules to predict explicitly which sequences of words are or are not sentences of the language. Among the types of rules which have been most studied are what are known as 'context-free phrase structure rules' (referred to hereafter simply as phrase structure rules), and many grammatical theories posit that the grammars of natural languages contain such rules. The description of  $L_1$  developed above will serve to illustrate the general concept. This description can be seen as a grammar which contains five rules. These rules are stated in prose in the left-hand columns in (5), and each prose description is rewritten in the right-hand column using the standard notation for phrase structure rules (again, the information on the left and on the right is exactly the same; these are merely different notations for the same thing). These rules need not 'apply' in any particular order; they are merely static

statements which taken together define the set of sentences of  $L_1$ . The numbering on rules is for expository purposes only.

- |   |                       |
|---|-----------------------|
| (i) S (a sentence) may consist of A followed by c | (5)                   |
| followed by A                                     | $S \rightarrow A c A$ |
| (ii) A may consist of ab                          | $A \rightarrow ab$    |
| (iii) A may consist of ad                         | $A \rightarrow ad$    |
| (iv) A may consist of ed                          | $A \rightarrow ed$    |
| (v) A may consist of dde                          | $A \rightarrow dde$   |
- (A set of rules such as that in (ii)–(v) can be abbreviated as a single rule schema as follows:  $A \rightarrow ab \mid ad \mid ed \mid dde$ .)

Given a grammar with phrase structure rules, a tree (or the equivalent labeled bracketed representation) is a representation of how the rules of the grammar specify the sentence as well-formed. Continuing to use  $L_1$  for illustration, the sentence *abcad* is well-formed according to (5) because it can be analyzed in the way shown in  $[s[ab] c[ad]]$ . Thus *ab* is a constituent of this sentence according to the rules in (5). In other words, the constituent structure of any sentence is a byproduct of the rule system; a sequence *x* forms a constituent in some sentence according to some grammar *G* if the rules of *G* provide an analysis of that sentence according to which *x* is an expression of some grammatical category. It should be further noted that a given phrase structure grammar might provide more than one structure for a given sentence. Consider, for example, a grammar with the rules:  $S \rightarrow A c A$  and  $A \rightarrow ac \mid acc \mid ca \mid a$ . This grammar assigns two different structures to the sentence *accca*:  $[s[acc]c[ac]]$  and  $[s[Aac]c[Aca]]$ .

The motivation for positing constituent structure for natural language is quite parallel to the reasoning discussed above in conjunction with the grammar in (5). But before applying this to a natural language such as English, there is one further assumption underlying most treatments of constituent structure which should be made explicit. In the artificial language  $L_1$ , the simplest set of rules to describe the sentences of this language is the grammar in (5). There are, however, other set of rules (or grammars) which describe the same language. For example, one grammar for  $L_1$  specifies that a sentence of  $L$  consists of an *A* followed by *c* followed by a *B*, where *A* can be *ab, ad, ed, or dde*, and *B* can be *ab, ad, ed, or dde*. Since  $L_1$  is not a natural object, there is no sense in which the grammar in (5) is the 'correct' one—it is merely the simplest. Natural language is, however, a somewhat different matter. While here, too, there might be several different rule systems which yield the same set of sentences, it is generally assumed that only one of these is the correct rule system. Underlying the claim that one grammar is correct is the assumption (made explicit within generative grammar) that a grammar is a set of rules which speakers actually 'know' (in some unconscious way) and which allows them to judge certain sequences of words as well-formed sentences

## Constituent Structure

of the language. In this view, the correct grammar is the one which is a (reasonably) close model of a speaker's actual mental representation of the linguistic system. When two different grammars both describe the same language, it is obviously very difficult to determine which is correct. But a working principle subscribed to in most work within linguistic theory is that the simplest grammar is the correct one. In view of this, the claim that some sequence of words within a sentence forms a constituent amounts to the claim that the simplest set of rules to describe the language treats this sequence as a unit.

This principle can be illustrated by considering a portion of English. Consider, for example, sentences of the form *x resembled y*, where *x* and *y* are any sequences of words which can be substituted in here to yield a well-formed sentence. A moment's reflection reveals that there is a large set of sequences which can occur in the position marked *x*, and that a large set can occur in the position marked *y*. What is particularly striking is the fact that these two sets are the same. To give just a few examples, note that all of the following are well-formed sentences: *The man resembles the rock*; *The man resembles the boat*; *The man resembles the woman*; *The rock resembles the man*; *The boat resembles the man*; *The woman resembles the man*; *The rock resembles the woman*. Moreover, this is also exactly the set of expressions which can follow a preposition, as in, for example, *The man sat on the rock*; *The man sat on the boat*; *The man sat on the woman*. Hence the simplest grammar for English will contain rules to define a set of well-formed noun phrases (NPs), and will specify that an NP may precede a verb like *resemble*, may follow a verb like *resemble*, or may follow a preposition. Note too that NPs themselves can be complex and can contain other NPs, as in *the front of the rock*, *the front of the man*, etc. Putting together these various observations, then, it is reasonable to hypothesize that English grammar contains, among others, the phrase structure rules shown in (6) (the motivation for positing a VP constituent is discussed below):

- (6)
- (i) S → NP VP
  - (ii) NP → Det N
  - (iii) NP → NP PP
  - (iv) PP → P NP
  - (v) VP → V<sub>1</sub>
  - (vi) VP → V<sub>2</sub> NP
  - (vii) VP → V<sub>3</sub> PP
  - (viii) Det → the | a | every | ...
  - (ix) N → woman | man | rock | ...
  - (x) V<sub>1</sub> → die | walk | ...
  - (xi) V<sub>2</sub> → resemble | kill | ...
  - (xii) V<sub>3</sub> → dash | sit | lie | ...
  - (xiii) P → on | under | ...

The same sort of reasoning can be used to justify some of the other details of the constituent structure shown in (3). Take, for example, the claim that *Tom hates Bill*

is a constituent, and a constituent of the same type as the entire sentence. This is motivated by the fact that sequences like this can occur as full sentences in their own right and, conversely, any sequence which constitutes a well-formed declarative sentence can occur in the position following *that* in (1). Consider further the claim that *that Tom hates Bill* is a constituent (which has here been labeled CP). Again, the evidence for this comes from the fact that sequences of the form *that S* occur in a variety of positions. These can, for example, occur in subject position as in (7a), and they can also follow an NP as in (7b):

That Tom hates Bill bothered Mary. (7a)

I told Mary that Tom hates Bill. (7b)

These distributional facts can be accounted for rather simply by adding to the phrase structure rules in (6) the following:

- (8)
- (xiv) S → CP VP
  - (xv) VP → V<sub>4</sub> CP
  - (xvi) VP → V<sub>5</sub> NP CP
  - (xvii) CP → C S
  - (xviii) C → that
  - (xix) V<sub>4</sub> → say | believe | think | ...
  - (xx) V<sub>5</sub> → tell | persuade | ...

Incidentally, the reader may have noticed that CP has roughly the same distribution as NP—it occurs, for example, in subject position and after certain verbs. However, while there is indeed considerable overlap in the distribution of CP and NP, their distribution is not in fact identical. For example, (9) shows that NPs occur after prepositions while CPs do not (an asterisk in front of a sequence indicates that it is not a well-formed sentence):

\*John is happy about that Mary left. (9a)

John is happy about the news. (9b)

While not attempting to justify all of the other details of the structure in (3), the motivation for positing a VP constituent will be briefly mentioned. Note that there are a large number of sequences which can follow subjects; some of these are illustrated by the italicized material in (10):

Mary *walked*. (10a)

Mary *killed the cow*. (10b)

Mary *dashed into the house*. (10c)

Mary *said that Bill left*. (10d)

Mary *told Tom that Bill left*. (10e)

But exactly this same set occurs in a variety of other environments. For example, this is exactly the same set that can follow *Sue helped Mary* in sentences like those in (11):



- Sue helped Mary *walk*. (11a)  
 Sue helped Mary *kill the cow*. (11b)  
 Sue helped Mary *dash into the house*. (11c)  
 Sue helped Mary *say that Bill left*. (11d)  
 Sue helped Mary *tell Tom that Bill left*. (11e)

(The fact that the verbal morphology is slightly different from in the examples in (10) has been ignored here.)

Suppose that the italicized sequences in (10) were not treated as constituents. This would mean that English does not contain the phrase structure rules shown above in (i), (v), (vi), (vii), (xv), and (xvi). Rather, in place of these it would contain the following rules:  $S \rightarrow NP V_1$ ;  $S \rightarrow NP V_2 NP$ ;  $S \rightarrow NP V_3 PP$ ;  $S \rightarrow NP V_4 CP$ ;  $S \rightarrow NP V_5 NP CP$ . But although these rules account for the sentences in (10), they do not account for those in (11). Since these are also well-formed sentences, English grammar would need several additional rules:  $S \rightarrow NP V_6 NP V_1$ ;  $S \rightarrow NP V_6 NP V_2 NP$ ;  $S \rightarrow NP V_6 NP V_3 PP$ ;  $S \rightarrow NP V_6 NP V_4 CP$ ;  $S \rightarrow NP V_6 NP V_5 NP CP$ ;  $V_6 \rightarrow \textit{help} \mid \textit{make}$  |, etc. Moreover, there are even longer sentences like (12), and so yet more rules would be needed:

- Sue helped Mary help Tom walk. (12a)  
 Sue helped Mary help Tom kill the cow. (12b)

But under the hypothesis that English grammar contains a category VP, there is a much simpler set of rules available to account for all of these sentences. Assume, then, that (i), (v), (vi), (vii), (xv), and (xvi) are among the phrase structure rules of English. All of the sentences in (11) and (12) can be accounted for with just two additional rules: (xxi)  $VP \rightarrow V_6 NP VP$ , and (xxii)  $V_6 \rightarrow \textit{help} \mid \textit{make}$  | etc.

## 2.2 Semantic Considerations

While the major motivation for constituent structure centers on distributional facts, the intuition that certain phrases form a unit also receives some confirmation from semantic considerations. Consider a sentence like (13):

- Everyone who ate the beef which was raw said that Bill left. (13)

Distributional evidence indicates that *everyone who ate the beef which was raw* is a single constituent (an NP), as is *the beef which was raw*. Moreover, in terms of the meaning, it is clear that *who ate the beef which was raw* 'goes with' or modifies *everyone* and not *said*. By the same token, *which was raw* goes with *the beef* (or, perhaps, *beef*) and not with *said*. In view of this, there is a close correspondence between the syntactic constituents and the semantic units. Along these lines,

*that Bill left* seems to form a meaningful unit in a way in which, for example, *said that Bill* does not (although see Sect. 3.4), and the distributional evidence discussed above similarly shows that *that Bill left* is a constituent.

That syntactic constituents generally also behave as semantic units is not surprising if a tree not only represents the way in which the rules of the grammar work so as to predict that a sentence is well-formed, but also represents the way in which the meanings of words are put together to give the meanings of larger expressions. Put differently, one hypothesis regarding the interaction of syntax and semantics is that each phrase structure rule in the grammar is coupled with a semantic rule specifying how the meanings of the immediate constituents of some expression combine to give the meaning of the whole expression. Just what these semantic rules look like is beyond the scope of this article: suffice it to say that under this conception each syntactic constituent has some kind of meaning, and conversely each semantic unit should therefore be a syntactic unit.

The notion that the semantic composition of a sentence is mirrored by its constituent structure yields interesting accounts of certain ambiguous sentences. As noted in Sect. 1, phrase structure grammars have the property that a single phrase structure grammar might assign more than one constituent structure to a single sentence. In certain cases, these dual analyses correspond to distinct meanings. A classic example is a sentence like (14):

- John saw the man with the binoculars. (14)

Note first that PPs can in general occur with any VP, as in (15a, b), and (15c) shows that more than one PP can occur here:

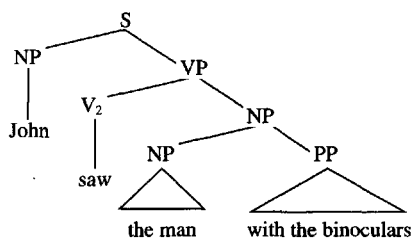
- John killed Bill with a knife. (15a)  
 John sang in the park. (15b)  
 John killed Bill with a knife in the park on Tuesday. (15c)

To account for this, assume that in addition to the rules discussed so far, English grammar also contains a rule (xxiii)  $VP \rightarrow VP PP$ . Assume further that the associated semantic rule says that the meaning of the PP modifies that of the VP (there is no attempt here to give a more precise definition of the notion 'modify'). Recall, however, that English grammar also contains the rule (iii):  $NP \rightarrow NP PP$ . Assume that this too has an associated semantic rule to the effect that the PP modifies the NP. Given these rules, there are two different structures for (14) (these trees show only those parts of the structure relevant for the point at hand; a triangle above some sequence indicates that that constituent has further internal structure not being shown here), as example (16) shows:

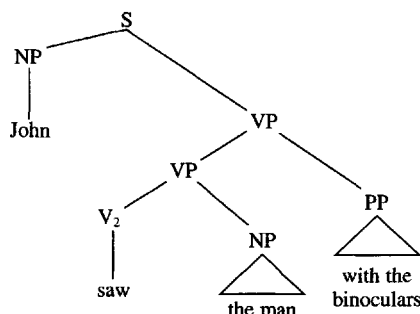


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(a)



(b)



These two correspond to the two different meanings. Under one meaning, the phrase *with the binoculars* modifies *the man*, and this is represented by the tree in (16a). Under the second meaning, *with the binoculars* describes the way in which the seeing of the man took place, and this is represented by (16b).

Before leaving this, it should be noted that not every sentence with more than one structure is necessarily ambiguous; the semantic rules might be such that two different structures will have the same meaning. Take, for example, the case of sentences connected by *or*, as in *John left or Bill stayed or Mary ran*. Such sentences can be accounted for by a phrase structure rule (xxiv)  $S \rightarrow S \text{ or } S$ . The corresponding semantic rule states that the entire sentence denotes a proposition which is true just in case at least one of its immediate constituent sentences denotes a true proposition. Consider now a sentence like (17):

John left or Bill stayed or Mary ran. (17)

Given the rule (xxiv), (17) has two different constituent structures:

$[s[s[s \text{ John left}] \text{ or } [s \text{ Bill stayed}] \text{ or } [s \text{ Mary ran}]]]$  (18a)

$[s[s \text{ John left}] \text{ or } [s[s \text{ Bill stayed}] \text{ or } [s \text{ Mary ran}]]]$  (18b)

However, the semantic rule associated with (xxiv) is such that these two structures correspond to the same proposition. In either case, the entire sentence denotes a proposition which is true just in case at least one of the three sentences *John left*, *Bill stayed*, or *Mary ran* denotes a true proposition.

(16)

## 2.3 Additional Considerations

There are a variety of other considerations which have been used both to support the claim that sentences have a constituent structure, and as evidence for the particular structure (or structures) for any given sentence. Many of these considerations are somewhat controversial and/or yield unclear results; nonetheless, a few of these will be mentioned here.

### 2.3.1 Prosodic Evidence

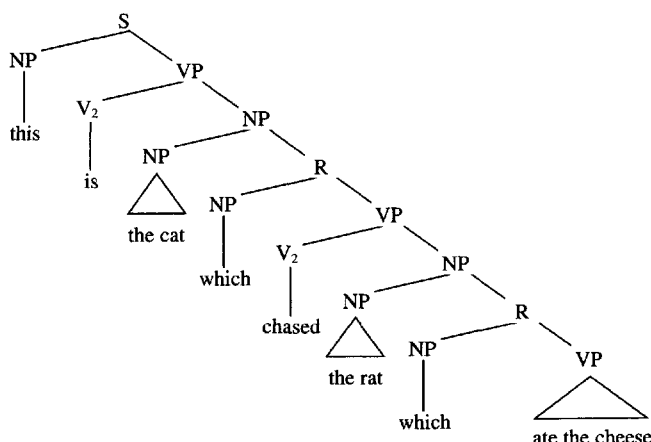
Although, in this article, written sentences have been used as a medium for discussing English, linguistic theory generally takes the spoken language to be the primary object of description. Sentences, when spoken, have a prosodic structure—this refers to the intonation contour and pause breaks. It has often been noted that the prosodic structure of a sentence meshes—at least to some extent—with its constituent structure. To develop this claim, consider again the tree in (4). Here, there is what is called a more major constituent break between *woman* and *sat* than between *sat* and *on*; thus, a more major break is one which occurs higher in the tree.

The claim, then, is that more major constituent breaks are marked by special prosodic cues; these are often marked by longer pauses and/or rising intonation. Thus, in the spoken version of the sentence shown in (4), there will generally be a longer pause between *everyone* and *sat* than between *sat* and *on*. Or, consider again the ambiguous sentence (14). If this is spoken with a longer pause between *man* and *with* than between *saw* and *the*, then the natural interpretation is the one in which *with the binoculars* modifies *saw the man*; if the longer break is between *saw* and *the*, then the other interpretation is more natural. Hence the pause breaks are taken as cues to the syntactic structure, and the two different structures in turn reflect the two different meanings.

Unfortunately, while the above example demonstrates that there is indeed some connection between the prosodic structure and the constituent structure, this connection is certainly not absolute. For example, even with a longer pause between *man* and *with* than between *saw* and *the*, one can still understand (14) on the meaning represented in (16a), although this interpretation is less natural or less readily accessible than the reading in (16b). There are, moreover, well-known cases where the most natural prosodic structure does not correspond well with the (apparent) constituent structure. A famous case of this sort is the sentence in (19) (Chomsky and Halle 1968):

This is the cat which chased the rat which ate the cheese. (19)

Distributional evidence of the type discussed in Sect 2.1 leads to the hypothesis that the structure for this sentence is (20):



Hence, the constituent break between *is* and *the* is more major than that between *cat* and *which*. By the same token, the break between *which* and *chased* is more major than that between *chased* and the second occurrence of *the*, and the break between *rat* and the second occurrence of *which* is more major than that between *which* and *ate*. Yet the sentence is generally pronounced as shown in (21), where || indicates the major pause breaks:

This is the cat || which chased the rat || which ate the cheese. (21)

If the constituent structure were directly mapped onto the prosodic structure, one would expect a significant break between *is* and *cat*; but such a break is extremely unnatural.

### 2.3.2 Interpretation of Pronouns

Another phenomenon which is often adduced in support of the claim that sentences have a structure centers on the distribution and interpretation of pronouns. Pronouns can, in general, be understood as having the same referent as some other NP in a sentence (or in a prior sentence), as in the following:

John said that he won. (22a)

John knew the woman who wrote to him. (22b)

That John lost bothered him. (23a)

The woman who wrote to John knew him. (23b)

In all of these, *he* or *him* can be understood as referring to John; in this case, *John* and *he* or *him* are said to be coreferential. (The pronouns may, of course, also be understood in all of these as referring to someone else, and so these sentences are ambiguous.) Interestingly, a pronoun can be understood as coreferential to a nonpronominal NP even if the pronoun precedes that NP, as in (24):

That he lost bothered John. (24a)

The woman who wrote to him loves John. (24b)

But in some cases, this is impossible:

He said that John won. (25a)

He loves the woman who wrote to John. (25b)

I made him write to the woman who loves John. (25c)

Here, *he* cannot be understood as coreferential to *John*, but must be understood as some other person.

These facts can be described by invoking the notion of the structure of the sentence. The exact conditions under which the coreferential interpretation is impossible are the subject of some controversy, but most formulations of the relevant principle make use of the structure in some way. To develop one standard account (see Reinhart 1983), two further terms concerning trees can be introduced. A branching node is a node which immediately dominates at least two other nodes; thus, in (4), S, VP, and PP are the only branching nodes. A node A c-commands a node B if and only if neither A nor B dominates the other, and the lowest branching node dominating A dominates B. So, for example, in (4) the terminal node *everyone* c-commands all of the other terminal nodes as well as the nodes VP, V<sub>3</sub>, PP, P, and the second NP node. With this apparatus, the condition governing the interpretation of pronouns can be described thus: a pronoun may not be understood as coreferential to any non-pronominal NP which it c-commands. The reader can verify that, given the rules developed above, the pronoun in each of the sentences in (25) c-commands *John*, but it does not do so in (22)–(24). Hence, the interpretation of pronouns provides interesting support for the claim that sentences are structured sequences of words.

### 2.3.3 Conjunction

One additional and very interesting test phenomenon which has been used as a diagnostic for constituent structure is conjunction. Note first that there are a

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variety of sequences which can be conjoined in English, as in the following:

The men and the women left. (26a)

John saw Mary and said that Bill left. (26b)

John believes that Mary left and that Sam came. (26c)

John believes that Mary left and Sam came. (26d)

It has often been claimed that the correct generalization regarding conjunction is this: only constituents may conjoin with other constituents (see Chomsky 1957); the two constituents must be of the same category; and the two conjoined constituents themselves form a constituent of the same category as each of the conjuncts (see, for example, Gazdar 1981). In other words, the relevant portions of the structures for (26a) and (26b), for example, are as follows:

[NP [NP the men] and [NP the women]] left (27a)

John [VP [VP saw Mary] and [VP said that Bill left]] (27b)

If the above generalization is correct, then it can actually be accounted for in a simple and elegant way. Assume that the grammars of natural languages contain not just phrase structure rules but also phrase structure rule schemata, where a rule schema is an abbreviation for a set of phrase structure rules. Then English grammar can contain the rule schema (xxv)  $X \rightarrow X \text{ and } X$ , where  $X$  is a variable over any category. This allows NP constituents which are of the general form  $NP \text{ and } NP$ , CP constituents of the general form  $CP \text{ and } CP$ , etc. If, moreover, this is the only rule or rule schema introducing conjoined material, then the above generalization follows. In other words, it follows that if two sequences  $x$  and  $y$  can conjoin to form a sequence  $x \text{ and } y$ , then  $x$  and  $y$  are each single constituents, and are constituents of the same type.

There are, however, a number of open questions surrounding the conjunction evidence as a test for constituency. First, there are some cases where apparently unlike categories can conjoin. For example, it was noted above that NP and CP do not have exactly the same distribution; yet in some cases these conjoin:

I believed [CP that Mary came] and  
[NP the other strange things that I heard]. (28)

As to the claim that only constituents conjoin with other constituents, there are many well-known instances of so-called nonconstituent conjunction. Consider, for example, the sentences in (29):

John likes and thinks that Bill hates everyone  
who was here. (29a)

John likes and Bill hates Mary. (29b)

Given the sort of evidence discussed above, there is little reason to posit that *thinks that Bill hates* is a

constituent, for this kind of sequence does not occur in a variety of environments. Yet here it conjoins with the constituent *likes*. Similar remarks hold for (29b), in which the apparent nonconstituent *John likes* is conjoined with another apparent nonconstituent (*Bill hates*). This will be returned to in Sect. 3.4.

### 3. Refinements, Questions, and Alternative Conceptions

Having presented the basic notion of constituent structure and some of the motivation for it, some open questions surrounding this notion will now be considered by presenting some approaches to constituent structure within a variety of a different theories.

#### 3.1 Binary Immediate Constituents

The reader may have noticed that almost all of the phrase structure rules discussed above for English provide trees in which a node immediately dominates at most two other nodes. Put differently, every constituent which contains smaller immediate constituents contains exactly two immediate constituents. In fact, almost all of the rules above are of the general form  $A \rightarrow B C$ , where  $B$  and  $C$  are labels for grammatical categories (called nonterminal labels), or of the form  $A \rightarrow a$ , where  $a$  is a single terminal; grammars with only rules of this form are called grammars in Chomsky normal form. There are a few exceptions to this; rules (xvi) and (xxi) allow a node immediately to dominate three nonterminals, and rule (v) allows a nonterminal (VP) to dominate a single nonterminal ( $V_1$ ). Rule (v), however, could be reformulated as  $VP \rightarrow die \mid walk \mid \dots$  (Rules (xvi) and (xxi) are discussed below.) The rule schema in (xxv) is also an exception, but this schema can also be reformulated in such a way that a constituent like *John and Mary* contains the two immediate constituents *John* and *and Mary* (see, for example, Gazdar, et al. 1985).

The fact that a constituent in English usually contains two immediate constituents was observed in much of the work in structural linguistics (see Wells (1947) for discussion). Whether or not this is an accidental fact about English grammar or follows from some more general principle regarding natural language grammars has been the subject of a certain amount of controversy, and it is interesting to note in this regard that grammars in Chomsky normal form have played a special role in the work on parsing within computational linguistics. Parsing refers to the process by which a listener (or, perhaps, a computer program) can recover the constituent structure of any sentence given the grammar for the language; if the constituent structure is indeed an indication of the semantic composition, then presumably this would be part of the process of arriving at a meaning for a sentence. Much of the work within computational

linguistics, then, seeks to provide an explicit algorithm according to which a sentence can be assigned its constituent structure (or structures), and, if such models are to reflect what it is that humans actually do, then the parsing algorithm must be as efficient as possible, since humans process a sentence almost instantaneously. Interestingly, some of the well-understood algorithms for efficient parsing make use of grammars in Chomsky normal form. In other words, such grammars have been shown to lend themselves to (reasonably) efficient parsing algorithms.

### 3.2 Discontinuous Constituents

Section 2 developed a view of grammar according to which material which forms a single constituent must be contiguous. This is because a phrase structure rule defines a well-formed expression of some category A by specifying that it may consist of some continuous sequence of smaller expressions. Moreover, if—as suggested in Sect. 2.2—each semantic unit corresponds to a syntactic constituent, then one would expect each semantic unit to be a contiguous sequence within a sentence.

Yet there are numerous instances where what appears to be a single semantic unit is a discontinuous sequence, and such cases are often referred to as discontinuous constituents (see Pike 1943). Consider, for example, the following sentences:

Everyone who was invited arrived. (30a)

Everyone arrived who was invited. (30b)

In (30b), *who was invited* modifies *everyone*, exactly as it does in (30a). Yet, in (30b), *everyone who was invited* is not a continuous sequence.

There are many other examples of discontinuous constituents; just two others will be mentioned here. One is exemplified by what is known as the topicalization construction, shown in (31):

Beans, I like. (31)

The verb *like* is a  $V_2$  and so normally occurs only with a following NP object; thus (32) is not a well-formed sentence:

\*I like. (32)

In (31), however, *like* is not followed by an NP object, but there is an NP at the beginning of the sentence which functions as the object of *like*. Thus, here, *like ... beans* is a unit in much the same way that it is in (33), even though in (31) it is discontinuous (and in (31) the object precedes the verb):

I like beans. (33)

Finally, it was mentioned in Sect. 3.1 that rules such as (xvi) and (xxi) are unusual in that they allow for constituents with three rather than two immediate constituents. However, it has often been proposed that these rules are incorrect (see Chomsky (1957) for discussion of a related case). Rather, in a sentence

like *John made Mary leave, made ... leave* is actually a single discontinuous constituent; hence it is a complex  $V_2$ . If this is correct, then here, too, the constituent structure is binary; the VP contains the two immediate constituents *made ... leave* and *Mary*, and *made ... leave* is a discontinuous constituent consisting also of two immediate constituents.

#### 3.2.1 Discontinuous Constituents in Transformational Grammar

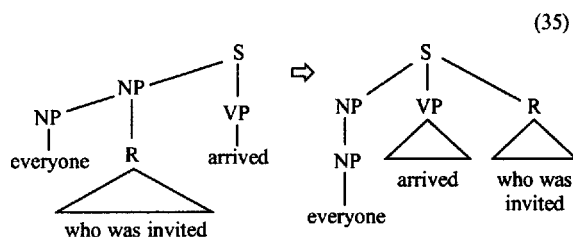
The phenomenon of discontinuous constituents is so widespread that a large portion of the research in grammatical theory since about the 1950s has been concerned with discovering the appropriate devices to account for it. The best-known approach to this phenomenon is that which is taken in transformational grammar. Although transformational grammar has undergone considerable evolution since its inception in the mid-1950s, what is presented here is what is sometimes referred to as the 'standard theory,' developed in Chomsky (1965). Under this theory, the grammars of natural languages contain phrase structure rules of the sort discussed in Sect. 2, but there are additional rules—known as transformations—which map trees onto other trees. The phrase structure rules themselves, then, do not define the set of well-formed sentences of a language, but rather define a set of well-formed deep structures. A deep structure may be mapped onto a different tree by a transformation, and, since several transformations may apply in succession, the resulting tree may in turn be mapped onto yet another tree. A sequence of trees formed in this way is called a derivation, and the last tree in such a sequence is the surface structure. A sentence is well-formed if and only if it is the 'bottom line' (the sequence of terminal symbols) of the last tree in a well-formed derivation; a derivation is well-formed if and only if its first tree is well-formed according to the phrase structure rules and each adjacent pair satisfies the description of some transformation. It should be noted that a derivation can also consist of just a single tree—in this case, no transformation has applied, and so the deep structure and the surface structure are the same.

This can be illustrated by considering the examples in (30). In addition to the phrase structure rules developed in Sect. 2, assume that English grammar also has the rules: (xxvi)  $NP \rightarrow NP R$  and (xxvii)  $R \rightarrow NP VP$ . These rules, combined with the other rules discussed above, will account for a sentence like (30a) and will assign it the structure in (34):

[<sub>S</sub> [<sub>NP</sub> [<sub>NP</sub> everyone] [<sub>R</sub> who was invited]] [<sub>VP</sub> arrived]] (34)

Suppose that there is a transformation which, informally stated, allows any R constituent to 'move' to the end of the sentence, where it will be attached directly under the S-node. This means that (30b) is well-formed, since (35) is a well-formed derivation.

## Constituent Structure



The first tree in (35) is the deep structure for both (30a) and (30b); (30a) is derived by a derivation in which no transformation applies, while (30b) involves the application of a transformation.

Thus, within transformational grammar, a 'discontinuous constituent' is a sequence of material which forms a single constituent in deep structure, but which is broken up by the application of one or more transformations. If deep structures also represent the way in which the meanings of the parts are put together to give the meaning of the whole sentence, then semantic units will be contiguous in deep structure, but need not be contiguous at surface structure. Moreover, within this theory, the application of transformations themselves is also used as a test for constituent structure. Consider the topicalized sentence (31). This can be accounted for under the assumption that the deep structure of (31) is the same as the deep structure for (33), where there is a transformation allowing any NP to 'move' to the front of the sentence. However, it is not only NPs which can front in this way—PPs and CPs may also prepose:

I often sit on the table. (36a)

On the table, I often sit. (36b)

I fervently believe that Mary left. (37a)

That Mary left, I fervently believe. (37b)

Interestingly, it appears that only single constituents may prepose (and the rule does not apply to its own output). Thus, for example, the following is bad, where an NP-CP sequence which does not form a constituent has preposed:

I told Mary that Bill left. (38a)

\*Mary that Bill left, I told. (38b)

However, while the preposability of some sequence  $x$  indicates that  $x$  is a single constituent, constituency is not a sufficient condition for preposability. There is evidence that the italicized material in (39a) forms a single constituent, but it cannot prepose as shown in (39b). Nor can the italicized S-constituent in (40a) prepose:

I know the woman *who wrote to Mary*. (39a)

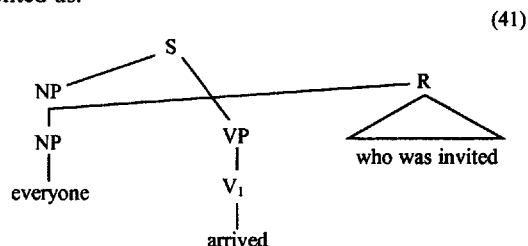
\**Who wrote to Mary*, I know the woman. (39b)

I think that *Bill left*. (40a)

\**Bill left*, I think that. (40b)

### 3.2.2 Other Views of Discontinuous Constituents

While transformational grammar provides perhaps the best-known account of discontinuous constituents, it is by no means the only available account of these phenomena. A number of theories provide rules which directly allow a sentence to be represented as a tree-like object with 'crossed branches'; thus the structure for a sentence like (30b) would be represented as:



The basic idea behind rule systems which provide representations like (41) is that there are rules roughly like phrase structure rules which specify well-formed expressions in terms of smaller expressions, but these rules do not require the immediate constituents of some expression to be contiguous. Rather, they can allow pieces of smaller expressions to be interrupted by other expressions; hence the NP *everyone who was invited* in (41) can be interrupted by the VP with which it combines to form an S.

The exact formal nature of the rules which yield representations like (41) varies considerably, as such systems have been explored within a variety of theories. Hence there is no attempt to formalize these systems here; proposals along these lines may be found in Harman (1963), Bach (1979), and McCawley (1982), though McCawley derives these structures by transformational rules. There is a variety of other accounts of the phenomenon of discontinuous constituents; for an interesting sample of such approaches, see Huck and Ojeda (1987).

### 3.3 Alternative Conceptions

The theories considered so far all claim that the structure of a sentence contains information as to dominance relations, linear order, the category labels of each constituent, and nothing else. There are, however, some rather different views of the structure of a sentence in which the objects representing this structure contain somewhat different information from the trees or tree-like representations discussed above. Two such views are considered here.

#### 3.3.1 Relational Grammar

One view rather different from those developed above is taken in relational grammar (hereafter, RG). There are a number of differences between RG and the theories developed above, and space precludes a



thorough treatment of this theory here (see Perlmutter (1983) for more exhaustive discussion). The central difference concerns the status of grammatical relations like 'subject,' 'direct object,' and so forth. In the theories discussed above, such notions are not taken as basic; rather, they are usually defined in terms of the tree structure. The subject of some S, for example, is that NP (or CP) which is immediately dominated by S; the direct object is that NP immediately dominated by VP. But proponents of RG have argued that there are certain properties shared by subjects in a wide range of languages; there are other properties shared by direct objects; and such properties need to be captured by grammatical theory. Furthermore, RG argues that no definition of subject or of direct object in terms of tree structure can be given which would characterize these notions in all languages. For this reason, RG simply posits these and other grammatical relations as primitives, and the structure of a sentence thus contains the information as to what grammatical relation is held by each constituent, and various grammatical rules can refer directly to these relations.

Like transformational grammar, RG posits that a sentence has more than one level of representation. Here, though, the majority of rules do not change the tree structure but rather alter the grammatical relations of one or more constituents. Consider, for example, a passive sentence like (42):

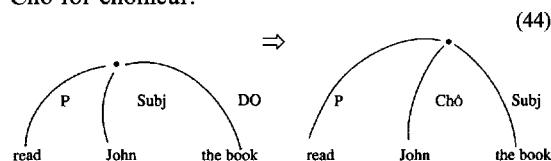
The book was written by John. (42)

In much of the work within transformational grammar, it is assumed that this has a deep structure which is similar to or identical to the deep structure of the corresponding active sentence (43) and that there is a transformation which moves the NP immediately following the verb (here, *the book*) into the position before the verb and postpones the deep-structure subject (here, *John*):

John wrote the book. (43)

(In some later transformational formulations, (42) and (43) actually have somewhat different deep structures; see, for example, Chomsky (1981).) In RG these two sentences also have the same representation at the initial level (the level known as deep structure in transformational grammar). However, in RG, the 'transformation' is not formulated so as to alter directly the linear order of the two constituents. Rather, it is what is known as a relation-changing rule, and its formulation is that a direct object becomes a subject, while the original subject takes on a new grammatical relation (called the 'chômeur'). Linear order, then, is also not encoded into all levels of representation of a sentence; there would, rather, be language-particular rules mapping the final structure of a sentence into an ordered sequence. In English, these rules specify (among other things)

that subjects come first, followed by the predicate, followed by the direct object, followed by the chômeur. The full set of structures for (42), then, can be represented as (44), where P is an abbreviation for predicate; Subj for subject; DO for direct object; and Chô for chômeur:



It should be pointed out that this is not quite the standard notational system adopted in RG; various modifications have been made for expository convenience, but these modifications do not affect the points at hand. What is important here is the fact that these representations on the one hand do not directly contain information as to the linear order of the constituents but, on the other hand, do contain information as to the grammatical relation of each constituent. Note, moreover, that category labels like NP or V are missing from these representations. Such information could, however, be added in without any significant change in the theory, although it has often been speculated that this information need not be directly represented but can be deduced from other properties of the representations (a related idea has been put forth within X-theory; see Jackendoff 1977). (Note also that the constituent structure is somewhat different from that standardly taken in accounts with phrase structure rules in that here there is nothing analogous to a VP constituent in English.)

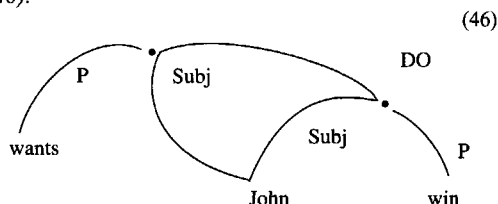
One final and very interesting difference between the RG conception of sentence structure and the more standard notion of constituent structure concerns what can be called 'multiattachment structures.' In the standard view of constituent structure developed in Sects. 1–3.2, a node is immediately dominated by at most one other node; this again follows from the way in which phrase structure rules work. A number of different theories, however, have suggested that the correct representations for sentences allow for a case where a single constituent is 'in more than one place'—that is, it is immediately dominated by more than one node. Again, the exact nature of the rules which allow for such representations varies from theory to theory (as one example, see Engdahl 1986). Relational grammar, also makes use of multiattachment structures; in the terms of RG, this means that a single constituent can bear a grammatical relation to more than one predicate, or can bear more than one grammatical relation to a single predicate.

Consider, for example, a sentence like (45):

John wants to win. (45)

## Constituent Structure

Here, *John* is the 'understood subject' of *to win*, yet is also understood as the subject of *wants*. To account for this, RG posits a multiattachment structure at some level at which *John* is subject of both verbs. Thus, oversimplifying somewhat, (45) would be represented as (46):

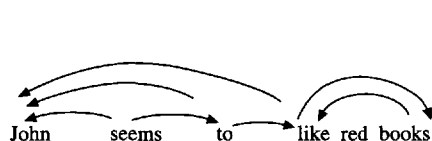


### 3.3.2 Word Grammar

Another rather different view of sentence structure is taken in word grammar (Hudson 1984) (a related, although somewhat different, view is to be found in Hudson 1976). Like the standard notion of constituent structure, the representation of a sentence in word grammar is a kind of hierarchical structure. However, it represents somewhat different information from the standard constituent structure trees. First, like the version of RG discussed above, constituents are not labeled as to their grammatical category. Second, not only may two or more words form a unit, but any given word may 'depend' on some other word. The intuitive idea here is that, for example, in a simple sentence the verb is central, and the NPs in the sentence depend on that verb (a related idea is embodied in the notion of head within X-theory; see Jackendoff 1977). Third, this theory also allows for something like multiattachment structures, in that a single word may depend on more than one other word.

To illustrate these points, consider a sentence like (47), whose representation is shown in (48); each arrow is an indication of a dependency relation:

John seems to like red books. (47)



Note that this represents some of the same information as does a standard constituent structure tree. Thus, for example, *like red books* in (48) forms a unit in the sense that it constitutes a chain of dependencies, and *red books* constitutes a dependency chain within the larger chain *like red books*. Hence this representation contains something akin to hierarchically arranged constituents. There are, however, also a number of interesting differences between this representation and a standard constituent structure tree. In the latter, *like red books*

would be treated as a constituent with two immediate constituents (*like* and *red books*), but these two immediate constituents have the same status within the larger constituent. Here, however, there is an asymmetry between these two, since the structure in (48) represents the facts that *books* depends on *like*. (A similar kind of asymmetry between two immediate constituents is found in categorial grammar; see Sect. 3.4.) Moreover, grammatical categories like NP play no role in the structures of word grammar. Finally, *John* depends simultaneously on *seems*, on *to*, and on *like* (a situation which Hudson labels 'modifier sharing'). Note, then, that this is quite similar to the multiattachment structures of relational grammar.

### 3.4 Constituent Structure in Categorial Grammar

One of the most unorthodox views of constituent structure is that taken in certain versions of categorial grammar (hereafter, CG)—a theory which derives from the work of Ajdukiewicz (1935) Lambek (1958), Bar-Hillel (1964), and others, and which has enjoyed a resurgence of interest. (There are a number of slightly different versions of CG; just one is discussed here.) In some sense, the view of constituent structure within CG is quite close to that discussed in Sect. 2; here, the grammar contains phrase structure rule schemata (see Sect. 2.3.3), and hence the structure of a sentence can be represented as a tree which itself is a representation of how the phrase structure rules work to specify a sentence as well-formed. Where the version of CG to be developed here differs from other accounts, though, is that any given sentence has a large number of constituent structures—some of which are quite surprising.

To develop this, first the notion of a syntactic category in CG is considered. Rather than positing a large number of categories such as NP, VP, V<sub>2</sub>, etc., CG posits a small set of basic categories, and all other categories are functions from categories to categories. The basic idea is most easily developed by example. Consider a verb like *see*. In Sect. 2.1, this was treated as an item of category V<sub>2</sub> where there is a phrase structure rule  $VP \rightarrow V_2 NP$ . One can, however, recast this information by viewing the syntactic category of *see* as a function which maps expressions of the category NP into expressions of the category VP; in particular, *see* combines with an NP to its right to yield a VP. Using the notation A/RB to designate the syntactic category of any expression which combines with an expression of category B to its right to yield an expression of category A, the category of *see* is VP/RNP. However, this can be broken down further. A VP itself need not be viewed as a primitive category, for it can be seen as something which combines with an NP to its left to yield a S. In other words, a VP like *see Bill* maps an NP like *the women* into the S *the women see*

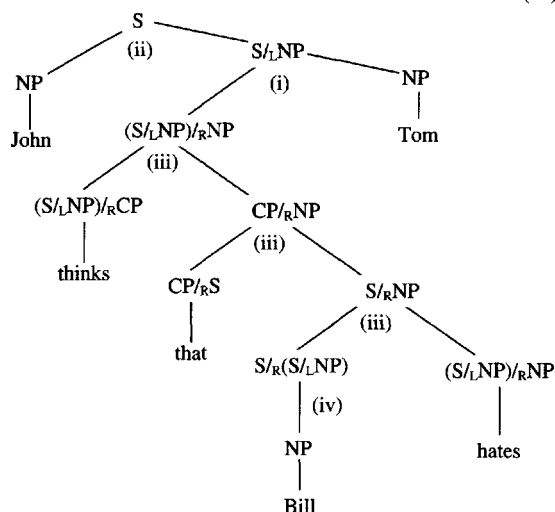
*Bill*. Hence, the category so far called VP can be recast as  $S/LNP$ . Thus, the category of *see* is  $(S/LNP)/_rNP$  and a simple intransitive verb like *die* is of category  $S/LNP$ , while a verb like *believe* is of category  $(S/LNP)/_rCP$ ; *that* is of category  $CP/_rS$ ; a preposition like *on* is of category  $PP/_rNP$ ; etc.

Much of the information contained in phrase structure rules is 'packed into' the categories of the words. In fact, with this view of syntactic categories, the grammar can contain just a few general phrase structure rule schemata. Two of these are: (i)  $A \rightarrow A/_rB B$  and (ii)  $A \rightarrow B A/_rB$ , for A and B variables over any category. (Note that these rules provide only for structures in which each constituent contains two immediate constituents; see Sect. 3.1.)

So far, this provides constituent structures which are much the same as in standard accounts. A sentence like *Everyone saw Bill* is well-formed because the rules provide the following analysis of this sentence: [<sub>S</sub> [<sub>NP</sub> *everyone*] [<sub>S/LNP</sub> [(<sub>S/LNP</sub>)/<sub>rNP</sub> *saw*] [<sub>NP</sub> *Bill*]]]. The category labels here are of course different from the labels used in Sect. 2, but the only significant difference between this structure and the more standard constituent structure is that it encodes an asymmetry between the two immediate constituents of any expression—one (the one whose category is of the form A/B) is the function, and the other (the one whose category is B) is the argument (see also the discussion of word grammar, Sect. 3.3.2).

But certain versions of CG include rule schemata in addition to those in (i) and (ii). The first pair of additional schemata (known as function composition) are: (iii)  $A/_rC \rightarrow A/_rB B/_rC$  and (iv)  $A/_rC \rightarrow B/_rC A/_rB$ . The second pair are both nonbinary rules (these allow a single nonterminal immediately to dominate a single nonterminal) and are known as type lifting. These schemata are: (v)  $B/_r(B/_rA) \rightarrow A$  and (vi)  $B/_r(B/_rA) \rightarrow A$ . These schemata may look rather ad hoc, but under the view of syntactic categories as functions which map expressions of one category to expressions of another they actually correspond to very natural operations on functions. (See Oehrle, et al. (1988) for discussion of this.)

What is especially interesting about these rule schemata is that they allow a single sentence to have a number of different constituent structures. To take just one example, consider a sentence like *John thinks that Bill hates Tom*. Under 'standard' theories, this has only the following structure (the labels on the constituents will be suppressed here): [*John* [*thinks* [*that* [*Bill* [*hates* *Tom*]]]]]. This is also a possible structure under CG and is, in fact, the structure which would be obtained by using only the rule schemata in (i) and (ii). But because of these additional schemata, there are other structures; another one, for example, would be as shown in (49) (where the rules which have applied at each point are also shown):



Note that *thinks that Bill hates* is a constituent, and is a constituent of the same category as an ordinary transitive verb like *likes*. Although there will be a great number of constituent structures for every sentence, the semantics is set up in such a way that these extra structures do not yield extra meanings. Note too that in view of the remarks in Sect. 2.2 regarding the fit between the syntactic constituent structure and the semantic composition, it follows that a constituent like *thinks that Bill hates* is a semantic unit. While such a result appears counterintuitive at first, it can perhaps be made more intuitive by comparing the meaning of such a unit to the meaning of a simple transitive verb. An ordinary transitive verb like *likes* can be thought of as denoting a relation between two individuals; in any situation, it will 'pick out' all pairs of individuals ( $x, y$ ) such that  $x$  stands in the liking-relation to  $y$ . A complex transitive verb like *thinks that Bill hates* similarly denotes a (complex) relation between two individuals. It too will, in any situation, pick out all pairs of individuals ( $x, y$ ) such that  $x$  stands in the thinking-Bill-hates relation to  $y$ .

In the discussion of conjunction in Sect. 2.3.3, it was pointed out that one hypothesis regarding conjunction is that only constituents may conjoin, and the two constituents must be of the same category. As noted earlier, however, there are apparent counterexamples to this involving cases of so-called nonconstituent conjunction. But in CG these counterexamples disappear, for the flexibility in the constituent structure means that each such case involves constituent conjunction. To clarify, assume that, in addition to the rule schemata discussed immediately above, English also contains the schema (xxv) discussed earlier ( $X \rightarrow X \text{ and } X$ , where  $X$  is a variable over any category). Now consider the case of conjunction in (29a) (*John likes and thinks that Bill hates everyone*

who was here). As shown above, within CG, *thinks that Bill hates* can be analyzed as a constituent of category  $(S/LNP)_{RNP}$ ; this is the same as the category of an ordinary transitive verb like *likes*. It thus follows that they can conjoin. Similar remarks hold for (29b); using the schemata above, there is an analysis of this in which *John likes* is a constituent (of category  $S/RNP$ ) and *Bill hates* is also a constituent of this category, and so the two may conjoin.

#### 4. Languages with Free Word Order

This article has focused exclusively on English as a way to demonstrate the notion of constituent structure and some of the controversies surrounding this notion. However, many languages are typologically very different from English. In particular, many languages have much greater freedom of word order than English has. In fact, it has often been noted that English has extremely fixed word order compared to many other languages; at the opposite end of the spectrum are many Australian languages with extremely free word order (and many languages are in between these two poles). The question arises, then, as to whether the sentences of such languages also have a constituent structure where there is simply a great deal of discontinuous constituents or whether, instead, the entire notion of constituent structure needs drastic modification for such languages. Indeed, languages with free word order are occasionally referred to as 'nonconfigurational' languages; a term which itself implies that constituent structure trees (or some similar object) are inappropriate representations for the sentences of such languages. It should be stressed that the question here is more than an issue of representation; as discussed in Sect. 2, a structure itself is simply a representation of how the rules of the grammar work to specify a sentence as well-formed. Thus, if the sentences of languages with free word order do not have a constituent structure in the way that English sentences do, this means that the grammars for such languages work on very different principles.

Although the correct analysis of such languages remains an open question, many researchers have concluded that the sentences of such languages do indeed have a constituent structure of the familiar sort, and that the grammars of these languages simply allow for a great deal of discontinuous constituents. That there is at least a certain amount of structure is evidenced by the following consideration. While the word order in, for example, many Australian languages is quite free (modifiers may be separated from the nouns that they modify; nouns and verbs may appear in any order, etc.), it is not completely free. In many such languages, words may freely 'scramble' within a single S, but words in a subordinate clause may not be freely mixed with words from a higher clause. (A subordinate clause is an S which, in constituent structure terms, is

dominated by a higher S-node.) Hence, Blake (1983) reports that Kalkatungu sentences obey this principle. A related phenomenon is discussed in Dixon's classic study of Dyirbal (Dixon 1972). Thus, Dyirbal contains what Dixon refers to as 'iteration of the favorite construction,' as exemplified by (50) (from Dixon 1972: 75); this construction can be analyzed as involving a series of subordinate clauses:

balan            dʒugumbil      bangul                                 (50)  
there-nom-II woman-nom    there-erg-I

yar<sub>ang</sub>u wawun                      nayinbagu  
man-erg fetch-pres/past girl-pl-dat

walmbilŋaygu	bagum	wuɖuɖu	burbilŋaygu
get up-nay-purp	there-dat-III	fruit-dat	pick-nay-purp

'man fetched woman to get the girls up to pick fruit'

Although there is a fair amount of freedom of word order in this construction, Dixon notes that in this construction a word dominated by some S node  $S_n$  must generally occur before the verb of some S node  $S_{n+1}$  if  $S_n$  dominates  $S_{n+1}$ . Even to describe this restriction, the notion of one S-node dominating the other has been used; if such sentences did not have any kind of structure, it is unclear how this restriction could be described. A detailed discussion of this general issue is contained in Dixon (1972), who provides an analysis of Dyirbal which relies heavily on the notion of constituent structure.

But even if it is correct that so-called 'nonconfigurational' languages do have a constituent structure in which there can simply be a great deal of discontinuous constituents, it of course remains an open question as to how best to account for the general phenomenon of discontinuous constituents. This is clearly one of the central issues of syntactic theory, and will undoubtedly occupy research for a long time to come.

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## Control

E. Jaworska

There is a range of subject-predicate constructions where the subject appears to be missing. Yet, it is quite easy to interpret the missing element correctly as either coreferential with some other noun phrase (NP) within the same sentence or as having arbitrary reference. Typical examples are:

John hoped [to fly]. (1a)

John persuaded Mary [to fly]. (1b)

[To fly] isn't easy. (1c)

In all three instances, the predicate in question is the infinitival *to fly*. In (1a), its understood subject is *John*, the matrix subject; in (1b), its understood subject is *Mary*, the matrix object; and in (1c), its subject has arbitrary reference, that is, its referent is anyone or anything in a given context. Thus, in the first two examples, the infinitivals with unexpressed subjects are 'controlled' by NPs elsewhere in the respective sentences—they display 'obligatory' control—and the third example displays 'arbitrary' control. The term 'control' can alternatively be used in the sense of the relation between an unexpressed subject and a controller. The specification of the nature of the controlled predicate and the identification of the controller are the major issues in any analysis of control.

### 1. The Basic Characteristics of Control Constructions

#### 1.1 Control Versus Noncontrol

The control construction is not the only one involving a predicate with an apparently missing subject, and it

is important to correctly identify the type in pre-theoretical terms. Thus, control sentences like (1a) have to be distinguished from subject-raising sentences like (2a), below, and control sentences like (1b) have to be distinguished from object-raising sentences or exceptional clause constructions like (2b):

John appeared to fly. (2a)

John believed Mary to fly. (2b)

The (a) sentences in (1) and (2) have in common an NP-verb-infinitival (NP-V-INF) pattern, and the (b) sentences have a common NP-V-NP-INF pattern. On inspection, substantial syntactic and semantic differences within these patterns occur. These were first presented systematically in Rosenbaum (1967). A comprehensive theory-neutral discussion of the differences can be found in Huddleston (1984: 209–22) and further textbook presentations are in Radford (1988: 320–24, 430–41) and Borsley (1991: 149–51).

Where predicates in complement position are involved, control constructions can be identified directly by reference to the type of the main verb. Thus, *hope* and *persuade* from the earlier examples are control verbs. *Appear* is an example of a subject-raising verb, and *believe* is one of object-raising or exceptional case-marking verbs.

Apart from control verbs, there are also control adjectives and control nouns. Examples (3) and (4), respectively, illustrate:

John was reluctant to fly. (3a)



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- John was anxious for Mary to fly. (3b)      Going by train was wise (of John). (8c)
- Mary accepted John's reluctance to fly. (4a)      In (8a), *Mary*, the complement of the preposition *to* controls the predicate *to apologize*. In (8b), *John* is a complement in the passive *by*-phrase and the understood subject of *to please Mary*. Finally, in (8c), *John* is the complement of *of* and the controller of the participial predicate *going by train* in subject position. The latter two sentences highlight the fact that it is often not necessary for the controlling NP to be overt: both are equally interpretable without (*by*) *John* and (*of*) *John* present, as in either case the controller is implied and the context provides the referent.
- Mary's expectations of John to fly were too high. (4b)

### 1.2 Other Types of Predicate with Missing Subjects

It is not just infinitivals in complement position that are subject to the control phenomenon in English. Participial constructions as in (5a, 5b) below and verbless predicates as in (5c) are the other types of controlled predicate. Controlled predicates can be found in complement position and also as subjects (cf. (1c) above), adjuncts, and prepositional objects. The following illustrate, with the relevant structures bracketed:

- John [tried [flying his new kite]]. (5a)      John wondered whether it was wise to learn Welsh (9a) or Polish.
- (Participial V-complement)
- Mary saw [[letters] [written by children]]. (5b)      John believes that driving slowly can save lives. (9b)
- (Participial NP-adjunct)
- John [[arrived] [tired]]. (5c)
- (Verbless VP-adjunct)
- [Writing a letter] was easy for Mary. (5d)
- (Participial subject)
- John [[flew] [to please Mary]]. (5e)
- (Infinitival adjunct)
- John left [without [saying sorry]]. (5f)
- (Participial P-complement)

However, finite predicates cannot be controlled:

- \*John was [hoping [might fly]]. (6a)
- (Finite V-complement)
- \*[Wrote a letter] was easy for Mary. (6b)
- (Finite subject)

### 1.3 The Controller: Types of Control

The interpretation of an unexpressed subject is either associated with some NP within the same sentence or it is arbitrary. As was noted earlier, subjects or objects can be controllers, depending on the choice of the control verb. The verb *hope* in (1a) above, for example, is a 'subject-control' verb, and the verb *persuade* in (1b) above is an 'object-control' verb. Some verbs, like *ask* in (7), have a dual classification:

- John asked Mary to fly with him. (7a)
- John asked to fly with Mary. (7b)

In (7a), with the object *Mary* as the understood subject of the infinitive, it is an object-control verb, and in (7b), in the absence of the object, *John*, the matrix subject is the controller and hence *ask* here is a subject-control verb.

Example (8) illustrates that a prepositional complement NP can also be a controller:

- John appealed to Mary to apologize. (8a)
- The trip was cancelled (by John) to please Mary. (8b)

### 1.4 Three Important Generalizations

While the controlling object of *ask* is not obligatory and in its absence the subject controls the predicate in complement position (cf. (7) above), in general, such a shift is not possible with prototypical object-control transitive verbs like *persuade*, *force*, or *lead*. What is known as 'Bach's generalization' (cf. Bresnan 1982: 373) states that the omission of the object NP with such verbs is impossible (Bach 1980: 304). Thus, while a subject-control verb like *promise* can be transitive or intransitive,

- John promised (Mary) to fly. (10)

object-control verbs must be transitive:

- John persuaded \*(Mary) to fly. (11a)
- John forced \*(Mary) to fly. (11b)
- John led \*(Mary) to fly. (11c)

Bach's generalization can be seen as a special case of what is known as 'Manzini's generalization.' This states that the controller of predicates in complement position must be present within the minimal clause containing the complement (Manzini 1983: 423). The generalization applies to subject as well as object controllers and excludes the possibility of arbitrary

or optional control of these predicates (except interrogatives as in (9a) above).

A major contrast between subject- and object-control constructions is highlighted by what is known as 'Visser's generalization' (cf. Bresnan 1982: 354). Visser, essentially, observes that the former do not have passive counterparts (1973: 2118). Thus, whereas (12a), with the transitive *persuade*, can be passivized, (13a), with a transitive *promise*, cannot:

John persuaded Mary to fly. (12a)

Mary was persuaded to fly. (12b)

John promised Mary to fly. (13a)

\*Mary was promised to fly (by John). (13b)

## 2. Analyses

As noted earlier, there are two major issues that any analysis of control needs to address. These are the specification of the nature of the controlled predicate and the identification of the controller. The next two sections consider these matters.

### 2.1 The Nature of the Controlled Constituent

Rosenbaum's (1967) pioneering analysis of verb complementation patterns in English resulted in the classical transformational grammar (TG) account of control constructions in terms of equi—the equivalent NP deletion transformation. The account postulated that controlled predicates originated as clauses (S's) with an overt subject. If the subject was formally and referentially identical (or equivalent) to an appropriate matrix NP, it was deleted by the transformation. For example, the sentence in (1a) above would be derived from something like *John hoped [<sub>S</sub> John fly]*, resulting in the surface structure representation *John hoped [<sub>S</sub> Ø to fly]* (see Akmajian and Heny 1975: ch. 9, for details of the analysis).

In the postclassical TG frameworks, control is no longer a transformational phenomenon. The frameworks differ in whether or not the unexpressed subject is associated with an explicit syntactic position. Within the government and binding framework (GB) it is, but within most of the other major alternatives it is not.

Within standard GB, the subject of a controlled predicate is a unique type of empty NP with the central properties of both ordinary pronouns and anaphors—PRO. Thus, predicates with unexpressed subjects are clausal constructions. Example (14) shows the structure of a controlled infinitive:

John hoped [<sub>S</sub> [<sub>S</sub> PRO [to [<sub>VP</sub> fly]]]] (14)

That a clause structure (S or IP) must be involved here follows from the assumption that all predicates must have an associated syntactic subject, enshrined in the extended projection principle (Chomsky 1982: 10). That a full clause structure (S' or CP) must be involved follows from the fact that controlled predi-

cates can be introduced by overt complementizers or *wh*-elements (cf. (9a) above).

The special status of the empty subject NP as PRO—a pronominal anaphor—follows from two principles of binding theory, a subcomponent of GB. They require that PRO must be both free and bound within its governing category—the minimal NP or S containing it and a governing item. Because of these contradictory requirements, PRO cannot have a governing category and hence it must be ungoverned. Therefore, it can only appear in subject position in a nonfinite S' (CP) (Chomsky 1981: 191; 1982: 21).

Within the major nontransformational frameworks such as lexical functional grammar (LFG) and phrase structure grammar (PSG), controlled predicates have no explicit empty subject associated with them. This approach is originally due to Brame (1975). Consequently, a controlled infinitival predicate for example, is a bare VP:

John hoped [<sub>VP</sub> to fly]. (15)

Such VPs have the associated subjects represented at other levels of analysis, the functional structure within LFG and the semantics within GPSG.

### 2.2 The Identification of the Controller

There was an assumption within Rosenbaum's (1967) analysis of control in terms of the equi NP deletion transformation that the controller of the deleted subject NP was the matrix NP nearest to it. Known as the 'minimal distance principle,' it provided, then, a purely configurational way of identifying controllers.

However, it has been generally accepted since Jackendoff (1972: 214–25) that structural relations are not sufficient. He has argued that semantic factors, in particular thematic roles associated with controllers, are of great importance in any analysis.

The control theory as a subcomponent of standard GB deals with the question of how the reference of PRO is precisely determined (Chomsky 1981: 74–79). Specifically, the theory seeks to establish the principles of coindexing PRO with some other (controlling) NP within the sentence and/or assigning to it arbitrary reference. A number of competing analyses have been developed, most notably by Manzini (1983), Bouchard (1984), Koster (1984), and Williams (1980). However, while a wealth of data and phenomena has been uncovered, no satisfactory GB theory of control has as yet emerged (Chomsky 1986: 131; Haegeman 1991: 263).

The most influential LFG theory of complement control has been developed by Bresnan (1982). Essentially, the relation between subjectless predicates and their controllers is established here by lexical rules and semantic rules.

The most comprehensive PSG theory of complement control to date is that in Sag and Pollard (1991)

developed within the model of head-driven PSG (HPSG). The theory purports to integrate the configurational and the semantic aspects of the phenomenon and explicitly account for a wide range of data. While critical of certain major features of various contemporary alternative theories, including Manzini's and Bresnan's, it incorporates or elaborates some of their insights.

Several works discuss various aspects of control in languages other than English. Among them are Rizzi (1986) on Italian; Zabrocki (1981) on Polish; Xu (1985–86) on Chinese; Gunji (1987: ch. 3) on Japanese; and Sigurðsson (1991) on Icelandic (see also the references in Sag and Poland 1991: 87–88).

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## Converb

M. Haspelmath

### 1. Defining the Converb

Many languages have an inflectional non-finite form of the verb whose main function is to mark adverbial subordination, i.e. a converb. Some examples are given below. (In these and later examples, the converb is printed in boldface and the interlinear gloss of the converbal adverbial clause is enclosed in square brackets to facilitate recognition of the clause.)

#### (1) Italian

*Non **ave-ndo** la chiave, non potè aprire.*  
[not hav-CONV the key] not could open  
'Not having the key, she couldn't open.'

#### (2) Polish

***Wychodz-ąc** ze szpitala Marek był  
zdrow jak ryba.*  
[leave-CONV from hospital] Marek was  
healthy like fish  
'Leaving the hospital, Marek was healthy like a fish.'

#### (3) Modern Greek

*I kopéla ton kitakse **xamojel-óndas**.*  
the girl him looked [smile-CONV]  
'The girl looked at him, smiling.'

#### (4) Hungarian (de Groot 1995: 292)

*János **hallgat-va** a zené-t tanul-t.*  
János [listen-CONV the music-ACC] study-PAST  
'János studied listening to the music.'

#### (5) Lezgian (Nakh-Daghestanian; Haspelmath 1995b: 417)

*Am **ajwandi-k** gazet **k'el-iz***  
*aqwaz-nawa.*  
he: ABS balcony-SUB [newspaper read-CONV]  
stand-PERF  
'He is standing on the balcony, reading a newspaper.'

The term *converb* for this type of verb form is fairly recent (cf. Haspelmath and König 1995). Converbs are generally known by various other names, e.g.

*adverbial participle* (especially in Slavic linguistics), *gerund* or *gerundive* (especially in Romance linguistics, cf. Italian *gerundio*, French *gérondif*), *conjunctive participle* (especially in Indian linguistics), *absolutive* (also in Indian linguistics). The term *converb* was coined in Altaic linguistics (Ramstedt 1903) and was first adopted as a general term for cross-linguistic purposes by Vladimir Nedjalkov (cf. V. Nedjalkov 1995). Cross-linguistic studies of converbs are Čeremisina 1977, V. Nedjalkov 1995, Haspelmath 1995a, I. Nedjalkov 1998.

The *converb* is best defined as ‘a non-finite verb form whose main function is to mark adverbial subordination’ (Haspelmath 1995a: 3); see van der Auwera 1998 for various slightly different definitions.

In being an adverbial verb form, it contrasts with three other main kinds of non-finite verb forms: participles (i.e. adjectival verb forms used in relative clauses), verbal nouns (nominal verb forms used in complement clauses or noun clauses), and infinitives (which are typically intermediate between verbal nouns and converbs in that they occur both in complement clauses and adverbial clauses of purpose, cf. Haspelmath 1989).

The defining criterion of adverbial subordination also delimits converbs from medial verbs, as described, e.g. for many Papuan languages, which are dependent verb forms in that they cannot occur in simple main clauses, but which do not qualify as subordinate (in the sense of ‘embedded’, cf. Haspelmath 1995a: §3.4 for further discussion). For instance the Japanese verb form marked by *-i* does not generally behave as subordinate (cf. Alpatov and Podlesskaya 1995), although it cannot occur in a main predicate. (I gloss this form here as ‘medial’, although this term is not used in Japanese linguistics.)

- (6) Japanese (Alpatov and Podlesskaya 1995: 472)  
*Taroo ga Amerika ni ik-i Hanako ga*  
*Huransu ni it-ta.*  
 [Taro SUBJ] America to go-MED] Hanako SUBJ  
 France to go-PAST  
 ‘Taro went to America, and Hanako went to France.’

The third requirement of the above definition is that the form should be non-finite. Many languages have finite verb forms for adverbial subordination, e.g. the ‘causative mood’ of West Greenlandic Eskimo:

- (7) West Greenlandic (Fortescue 1984: 65)  
*Anurli-ssa-mmata aalla-ssa-nngil-agut.*  
 [be.windy-FUT-CAUS.3SG] leave-FUT-NEG-INDIC.1PL  
 ‘Since it is going to be windy, we won’t leave.’

In V. Nedjalkov’s (1995) definition of the converb, such finite adverbial forms are also included. However, they are excluded here, because under such a broad definition the category of converbs would comprise too many disparate phenomena. However,

it must be admitted that it is often difficult to decide whether a verb form is finite or non-finite. Traditionally, non-finite verbs are said to lack person-number agreement, tense and mood specifications, but these may be absent to different degrees, so that different degrees of (non-)finiteness have to be distinguished. With respect to this aspect, the above definition of converb is therefore deliberately vague.

Converbs appear to be particularly characteristic for SOV languages, and they are widely found in northern Eurasian and South Asian languages (cf. Masica 1976 for the areal distribution of converbs).

## 2. Semantic Properties of Converbs

Converbs may express different kinds of adverbial meaning relations, ranging from the fairly unspecific (e.g. 8) to the highly specific (e.g. 9).

- (8) French (Halmøy 1982: 241)  
*Les enfants criaient de joie, en voyant passer le bateau.*  
 ‘The children cried out loud with joy, seeing the boat.’  
 (9) Evenki (Tungusic; I. Nedjalkov 1995: 452)  
*Bi tuksa-ča-v deru-knen-mi.*  
 I run-PAST-1SG [get.tired-CONV-REFL.SG]  
 ‘I ran until I got tired.’

Converbs like the one in (8), which have a highly general and contextually variable meaning, are called **contextual converbs**, whereas converbs which express a very specific meaning such as posteriority (‘until’) in (9) are called **specialized converbs** (cf. V. Nedjalkov 1995: 106). Languages may have a large number of specialized converbs for different adverbial relations. For instance, I. Nedjalkov (1995) describes 16 converbs in Evenki, and Haspelmath (1995b) describes 10 converbs in Lezgian. The core languages of Europe (i.e. Germanic, Romance, Slavic, and Balkan) typically have only one converb, which is always of the contextual type (I. Nedjalkov 1998: 432).

The range of meanings that contextual converbs may have can be illustrated with the French converb (‘*gérondif*’) marked by *en V-ant* (cf. Halmøy 1982, König 1995).

- (10)  
 (a) manner  
*Elle traversa le fleuve en nageant.*  
 ‘She crossed the river swimming, i.e. She swam across the river.’  
 (b) attendant circumstance  
 ... dit-il *en se levant*.  
 ‘... he said standing up.’  
 (c) interpretative  
*En tuant sa mère ... il a aussi assassiné le rêve.*  
 ‘In killing his mother he has also killed the dream.’  
 (d) instrumental  
*Il a éteint le feu en pissant dessus.*  
 ‘He put out the fire by urinating into it.’



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- (e) conditional  
*Vous réussiriez mieux en procédant avec plus de méthode.*  
 'You would be more successful if you proceeded more methodically.'
- (f) concessive  
*Mais tout en accusant ma nature, je me savais incapable de la dompter.*  
 'But even though I accused my temperament, I knew that I was incapable of controlling it.'
- (g) temporal-simultaneous  
*Je chante en me rasant.*  
 'I sing while shaving.'

This (by no means complete) list of adverbial relations does not necessarily imply that the various meanings of the converb must be analyzed as forming a polysemy network. König (1995) argues for a vague general meaning which may be contextually enriched so that different utterance meanings arise in different circumstances. The resulting meaning depends on syntactic factors such as word order and intonation breaks, semantic factors such as the choice of tense, aspect, actionality and modality, and on pragmatic factors (world knowledge). However, it is extremely difficult to specify the general meaning of a contextual converb and the precise conditions under which the various utterance meanings arise, so in practice most descriptions of contextual converbs make use of lists such as (10).

Specialized converbs may express any of the well-known adverbial relations, such as temporal (simultaneity, anteriority, posteriority), conditional, concessive, causal, purposive, etc. Four examples from Lezgian illustrate this (Haspelmath 1995b).

- (11) Lezgian
- (a) temporal converb (-la)  
*Nurbaladi-waj wiči-n dide akur-la*  
*aqwaz-iz xa-na-č.*  
 Nurbala-OBL [self-GEN mother see-CONV]  
 stop-INF can-AOR-NEG  
 'Nurbala couldn't stop when he saw his mother.'
- (b) posterior converb (-daldi)  
*Wi q<sup>h</sup>sanwal za req'i-daldi rik'e-laj*  
*alud-da-č.*  
 you.GEN goodness I.ERG [die-CONV] heart-OBL  
 take.off-FUT-NEG  
 'I will not forget your goodness till I die.'
- (c) purpose converb (-wal)  
*Ada q<sup>h</sup>san-diz k'walax-daj-wal, wuna*  
*gerek tir šart'-ar jaratmiš-a.*  
 [he(ERG) good-ADV work-FUT-CONV] you:ERG  
 necessary COP:PTCP condition-PL create-IMPV  
 'Create the necessary conditions in order for him to work well.'
- (d) causal converb (-wiläj)  
*Papa am k'wali-z hebe ič'i*  
*ja-z xta-nwaj-wiläj sual-ar ga-na.*  
 wife(ERG) [he:ABS home-DAT [bag empty  
 be-CONV] return-PERF-CONV] question-PL give-AOR

'His wife asked questions because he came back home with an empty bag.'

In addition to contextual and specialized converbs, V. Nedjalkov (1995) distinguishes a third subtype, **narrative converbs**. Narrative converbs express one of a series of successive events as are often found in narratives ('The hero leave-CONV his village, travel-CONV abroad, kill-CONV a dragon, marry-CONV the princess, returned home triumphantly.') However, by the definition given in the preceding section, such uses do not really fall under the category 'converb', because such chained clauses are presumably neither adverbial clauses nor subordinate. But in some languages (e.g. Turkic languages), one and the same verb form can occur as contextual and narrative converb, so narrative converbs cannot be excluded completely from consideration.

A further relevant distinction for contextual converbs is that between the **adverbial** and the **adsentential** use. Adverbial converbs modify the verbal predicate and generally have manner or instrument meaning, whereas adsentential converbs modify the clause and may have various temporal and causal meanings. Typically, adsentential converbal clauses form a separate intonation group and are marked off by a comma in writing, whereas adverbial converbs are more closely integrated in the clause. An example of the contrast between adverbial (or 'non-detached') and adsentential (or 'detached') converbs is found in (12).

- (12) Italian (Lonzi 1991: 574)
- (a) *È uscito sbattendo la porta.*  
 'He went out slamming the door.'
- (b) *È uscito, dovendo aspettare un pacco.*  
 'He went out, since he had to wait for a package.'

A further difference between adverbial and adsentential converbs is that only the former may be in the scope of negation, interrogation, or focus particles. For example, the negated version of (12a) (*Non è uscito sbattendo la porta*) can mean 'He went out without slamming the door', whereas the negated version of (12b) can only mean 'He did not go out, since he had to wait for a package'.

Adverbial converbs may be so closely linked with the main verb that they take over some of its modal properties, e.g. imperative mood, interrogation, negation. Thus, in some languages we find examples like those in (13).

- (13)
- (a) Lezgian (Haspelmath 1995b: 424)  
*Fe-na sa masa rag axtarmiš-in.*  
 [go-CONV] one other rock search-HORT  
 'Let's go and look for some other rock.'
- (b) Turkish (Johanson 1995: 324)  
*Gel-ip gör-sün mi?*  
 [come-CONV] see-OPT.3SG INTERROG  
 'Shall he come here and see?' (not: 'Having come here, shall he see?')



### 3. Restrictions on Subject Reference

In many languages, verbal subordinate clauses are restricted as to the reference of their subject argument. Most typically, the converb subject must be coreferential with the superordinate subject (or another salient argument of the superordinate clause). This is true in particular of those converbs that do not allow the overt expression of their subjects (implicit-subject converbs). European languages, where non-finite forms in general do not allow an overt subject, typically have such converbs with an unspecified subject whose reference is controlled by the main clause subject. (In the examples below, the position of the implicit subject is indicated by 'Ø'.)

(14) Hungarian (de Groot 1995: 291, 296)

(a) Ø<sub>i</sub> *a könyv-et olvas-va sétálgat-ott* János<sub>i</sub>.  
[ the book-ACC read-CONV] walk-PAST János  
'While Ø<sub>i</sub> reading the book, János<sub>i</sub> walked up and down.'

(b) \**Mari énekel-ve János dolgoz-ott*.  
[Mari sing-CONV] János work-PAST  
'While Mari was singing, John was working.'

(15) Russian

{Ø<sub>i</sub> / \*Miša} *uvide-v menja*, Lena<sub>i</sub> *udivilas*.  
[Ø Miša see-CONV me] Lena was astonished  
'When she<sub>i</sub>/Miša saw me, Lena<sub>i</sub> was astonished.'

In these languages, a finite adverbial clause must be used when the main and adverbial clauses have different subjects. In other languages, there may be special converbal forms for same-subject and different-subject contexts. In such cases, one speaks of a **switch-reference** system (Haiman and Munro 1983). An example comes from Tuva, a Turkic language, where the converb in *-GAš* is the same-subject form, and the masdar (verbal noun) in *-Vr* plus the dative case suffix *-GA* is the different-subject form:

(16) Tuva (Bergelson and Kibrik 1995: 376)

(a) *ava-m inek-ti saapt-ar-ga*,  
[mother-1SG cow-ACC milk-VN-DAT]  
*Kara-kis č an-ıp kel-ir*  
*Kara-kys go.home-CONV AUX-IMPF*  
'My mother will milk the cow, and Kara-kys will go home.'

(b) *ava-m<sub>i</sub> inek-ti saap-kaš*, Ø<sub>i</sub> *č an-ıp kel-ir*  
[mother-1SG cow-ACC milk-CONV] go.home-CONV  
AUX-IMPF  
'My mother will milk the cow and go home.'

The requirement of same-subject reference is usually not a strict semantic condition, but allows various pragmatically governed exceptions. For instance, a non-nominative experiencer may often control (i.e. determine the reference of) the implicit converb subject, as in (17).

(17)

(a) Polish  
*Pisz-qc te słowa, przypomniała mi się zeszłoroczna rozmowa.*  
[write-CONV these words] recalled to.me  
self last.year's conversation  
'Writing these words, last year's conversation comes to my mind.'

(b) English (Kortmann 1991: 43)

Ø<sub>i</sub> *Looking out for a theme, several crossed his<sub>i</sub> mind.*

And sometimes even an implicit perceiver can count as a 'subject' for the purpose of the same-subject condition. For instance, the same-subject converb *-kse* in Evenki (Tungusic) can be used when 'the main clause describes a situation which is perceived by a human being' (I. Nedjalkov 1995: 458), as in (18).

(18) Evenki (I. Nedjalkov 1995:459)

*I-kse ekun-kat ač in*  
[enter-CONV] anybody-PTCL no  
'When he<sub>i</sub> entered, (he<sub>i</sub> saw that) there was nobody there.'

However, many converbs in non-European languages can be either same-subject or different-subject, i.e. there is no restriction on subject coreference. Such converbs may still have an implicit (unexpressed) subject when it is identical to a superordinate argument. An example comes from Turkish, where the *-IncA* converb may be same-subject (19a) or different-subject (19b).

(19) Turkish (Slobin 1995: 352–3)

(a) *Çocuk sabah kalk-ınca kurbağa-yı ar-ıyor.*  
boy [morning get.up-CONV] frog-ACC  
search-IMPF  
'When the boy gets up in the morning, he searches for the frog.'

(b) *Köpek düş-ünce baş-ın-da-ki şişe kırıl-ıyor.*  
[dog fall-CONV] head-3SG-LOC-ATTR jar fall-IMPF  
'When the dog falls, the jar on his head breaks.'

Thus, there is nothing special about non-finite verb forms which have their own explicit subject. But in European languages, this occurs rarely, and in some languages it is completely impossible. When such cases occur, they are sometimes called 'absolute constructions':

(20) Spanish (Reese 1991: 31)

*Permitiéndolo Dios, mañana comenzaremos el viaje.*  
'God permitting, we will start out on the journey tomorrow.'

### 4. Converbs and Related Phenomena

One of the reasons why converbs are often called '(adverbial or conjunctive) participles' is that in many European languages, participles may also be used in constructions of adverbial subordination. In Latin and Greek, such constructions are called *participium*

*conjunctum* (for same-subject constructions) or ‘absolute participial construction’ (for different-subject constructions). Such constructions also occur in some modern European languages, e.g.

(21) Italian (Bertuccelli Papi 1997: 3, 12)

(a) *Arrivato a casa presto, Giorgio si mise a leggere il giornale.*

‘Having got home early, Giorgio started reading the newspaper.’

(b) *Partita Sandra, Giorgio si dedicò al suo lavoro.*

‘Once Sandra had left, Giorgio turned to his work.’

What these participial constructions share with converbs is that they are non-finite, have an implicit subject in the same-subject case (21a), and have contextually variable adverbial meaning. The only reason why they are not called converbs in the strict sense is that they are not specialized for the purpose of adverbial subordination—they also have the participial function of expressing adnominal subordination (*l'uomo arrivato a casa* ‘the man who arrived at home’). Another point of contact between participles and converbs is that in the Slavic languages and in Modern Greek, the converbs go back diachronically to participles.

Another construction type that is similar to converbs is the use of an inflectional verbal noun (or masdar) with an adposition or an oblique case form, as illustrated in (22).

(22)

(a) Meithei (Tibeto-Burman; Chelliah 1997: 173)

*nəŋgi nə-ča əykhoy-də lak-pə-də*  
*əy-nə čək čá-hən-khi.*

[you-GEN 2SG-small we-LOC come-VN-LOC]

I-ERG rice eat-CAUS-ASP.MOOD

‘When your sister came to our place, I fed her.’ (lit. ‘On your sister coming to our place...’)

(b) Eastern Neo-Aramaic (Kapeliuk 1998: 281)

*g'ivmj-iva bi-štājā čāj.*

gather.PERF-3PL [CONV-drink.VN tea]

‘They have gathered, drinking tea.’

Often such combinations of a verbal noun marker with a case marker become fixed and idiomatic, and then they are not easy to distinguish from converbs, as seems to be the case for (22b) from Neo-Aramaic (cf. also 16b above). Such adverbial forms of verbal nouns seem to be a frequent diachronic source of converbs. For instance, the Romance converb in *-ndo* (cf. 1, 12, 20) comes from the ablative(-instrumental) case of the Latin *gerund*, a kind of verbal noun.

A third well-known construction type that is closely related to converbal constructions is the **serial verb construction** (cf. Bisang 1995 for a detailed comparison of the two). Like converbs, serial verbs typically do not have their own specification for tense and mood, and as in the case of converbs, very often an argument is shared among the two verbs. Serial verb

constructions have most often been described for languages with little morphology, such as West African languages, South-East Asian languages, and creole languages, whereas languages with converbs typically show rich verbal morphology. Thus, one might say that serial verbs in isolating languages are the functional equivalent of converbs in synthetic languages. However, serial verbs generally correspond only to converbs that modify the main clause at the predicate level (i.e. of adverbial, not of adsentential converbs). In (23) and (24), we see examples of converbs in the (a) examples and of serial verbs in the (b) examples. The function of the converb/serial verb is to add a directional specification in (23), and to introduce a beneficiary participant in (24). (The examples are from Bisang 1995.)

(23)

(a) Khalkha Mongolian

*ter ger-t-ee gūj-ž or-žee*  
he house-LOC-his [run-CONV] enter-tense  
‘He ran into the house.’

(b) Yoruba

*mo mú iwé wá ilé*  
I take book come house  
‘I took a book home.’

(24)

(a) Tamil

*raajaa kumaar-ukkuk katav-ait tir-a-ntu*  
*koṭu-tt-aṇ.*  
Raja Kumar-DAT [door-ACC open-CONV]  
give-PAST-3SG  
‘Raja opened the door for Kumar.’

(b) Mandarin Chinese

*wǒ gěi tā mǎi xiāngyān.*  
I give him buy cigarette  
‘I buy cigarettes for him.’

When serial verbs are more or less grammaticalized and come to resemble prepositions, they are often called ‘co-verbs’. The tendency to acquire grammatical functions is also shared by converbs, which may turn into adpositions as well (e.g. French *pendant*, English *concerning*, German *während*, cf. Kortmann and König 1992).

Finally, converbs are similar to medial verbs, as we already saw in §1.

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## Coordination

C. Grover

The term 'coordination' is used to refer to the process whereby two or more similar units are grouped together to form a larger unit of the same type. The units that are coordinated may be complete sentences,

phrase level constituents, or single words. Coordinate structures are endocentric—all the conjuncts are of the same type and status and the coordination as a whole is of the same type and status as its subparts:

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because of this, each subpart can be substituted for the whole. This distinguishes it from 'subordination' which links units of unequal status.

Coordination poses a problem for syntactic theory in several respects. First, its endocentric nature means that the standard generalizations about hierarchical structure are not straightforwardly applicable to coordination: for phrase structure grammar it is problematic because no single head can be identified; for a dependency framework the problem lies in the fact that neither conjunct can be said to be a dependent of the other. Second, since almost all syntactic categories can participate in coordinate structures, it is a challenge for syntactic theory to provide a minimal set of rules which are sufficiently general yet restrictive enough. Third, while it is generally true that coordination is between complete constituents and that conjuncts are of the same category, there are a number of commonly occurring apparent exceptions to these assumptions: under certain conditions dissimilar constituents may coordinate and, elsewhere, non-constituent sequences may occur as conjuncts. A number of syntactic theories, most notably generalized phrase structure Grammar (GPSG), combinatory categorial grammar (CCG), word grammar, have taken coordination to be a core rather than a peripheral phenomenon, and in all cases the treatment of coordination has influenced the shape of the theory. As yet, no syntactic theory has been able to describe the full range of coordinate structures, but GPSG and CCG have separately made significant contributions to the understanding of what might be the mechanisms underlying coordination.

### 1. Some Properties of Coordinate Constructions

Coordination is possible in English with all the major syntactic categories and it may occur at the lexical, phrasal, or intermediate level. As illustration, the following sentences (1)–(7) contain coordinations of S, VP, V, NP, AP, A, and PP respectively (italics indicate the extent of the coordination):

- (1) *The moon goes round the earth and the earth goes round the sun.*
- (2) *Jack fell down and broke his crown.*
- (3) *We will attack and beat the enemy.*
- (4) *She promised to send either a letter or a postcard.*
- (5) *A very sleek but rather fat cat appeared in the garden.*
- (6) *Fred was both angry and upset about the incident.*
- (7) *The journey took them across deserts and through jungles.*

It is less clear whether minor, closed class categories are able to coordinate. Some NP specifiers do seem to be able to, as in *some or all people* but other examples of coordinated NP specifiers are ill-formed *\*a or the*

*cat*. It is difficult, although not impossible, to construct plausible coordinations of other kinds of closed class category such as complementizers, or indeed, coordinators.

Many writers use different terms to describe coordinate structures and their parts and this can lead to some confusion as to which interpretation a particular term is given. The phenomenon of coordination is often referred to as 'conjunction' even though this seems to exclude 'disjunction' (coordination with *or*) from discussion. Moreover, the term '(coordinating) conjunction' can also be used to refer to words like *and*—words which serve as markers of coordination. To avoid confusion the term conjunction will be avoided: coordination will be used to refer to the overall phenomenon and 'coordinator' to refer to *and*, *or*, *but*, etc. The units which make up a coordinate structure (for example, *very sleek and rather fat* in (5)) are generally referred to as 'conjuncts' and this term is used here. Elsewhere they are sometimes referred to as 'conjoins.'

Coordinate structures occur in all languages but there are some languages which do not use coordinators to mark them: Dyirbal seems to be such a language (see Dixon 1972). In English, coordinations can sometimes occur without a coordinator, as in the italicized coordination of PPs in (8):

- They searched everywhere—in the attic, under  
the floorboards, down in the cellar. (8)

When a coordinate structure occurs without a coordinator, this is known as 'asyndetic' coordination.

Coordinators are closed-class words and for any language the number of coordinators is small. In English, the set standardly listed is *and*, *or*, *nor*, *but*, *both*, *either*, *neither*. Opinion varies as to whether there are more members of the set: *then* is sometimes taken to be a coordinator, as is *not* (*It was Jack not Jill*). Possible compound coordinators are *but not*, *and not*, *not only ... but also*.

Most English coordinators can occur with any category but there are restrictions on some. For example, it is often hard to use *but* to coordinate NPs (*\*Jack but Bill arrived*, *\*We saw Jack but Bill*). Here it seems that semantic factors cause a restriction: in order for *but* to occur felicitously the conjuncts must contrast with one another, either explicitly (*We saw not Jack but Bill*) or implicitly (*He is a fraud but a kind man nevertheless*) (cf. also Payne 1985 on the semantics of coordinators). In other languages the distribution of coordinators may depend on the syntactic category to be coordinated. In Fijian, for example, there are two equivalents of English *and*: *ka* is used in coordinations of S, VP, AP, and PP but *kei* is used for coordinations of NP.

Some coordinators can appear in 'correlative' pairs. The most common correlative pairs in English are *neither ... nor*, *either ... or*, and *both ... and*, where



the first member of the pair marks the first conjunct and the second marks the final (and intermediate) conjuncts. The order and pairings of these correlatives are fixed: *\*or Jack either Jill*, *\*both Jack nor Jill*. Correlative coordination occurs in many languages and most typically the same coordinator occurs as both halves of the pair, as in the French *ni Jean ni Pierre* (*neither John nor Peter*). English, with its dissimilar pairs, is somewhat unusual in this respect.

Coordinate structures contain at least two conjuncts but may contain more. Coordinations with two conjuncts are here referred to as 'binary coordinations' and ones with more than two conjuncts as 'multiple coordinations.' Some coordinators do not easily occur in multiple coordinations *but* and *both* ... *and* are restricted to binary coordination as shown by the ill-formed examples *\*both Tom and Dick and Harry*, *\*He ran but was too late but missed the bus*. Whether or not multiple coordinations with *either* ... *or* and *neither* ... *nor* are acceptable seems to vary across speakers.

In noncorrelative multiple coordinations, there are constraints on the distribution of coordinators. Either the coordinator appears only before the final conjunct (*eat, drink, and be merry*) or it appears before all but the first conjunct (*red and yellow and green and blue*). The coordinator cannot appear randomly (*\*and red and yellow, green, blue*). Since conjuncts can easily be coordinate structures in their own right, the distribution of coordinators can sometimes resolve what might otherwise be an ambiguity. Structurally, *Bob and Carol and Ted and Alice* is many ways ambiguous—there are eleven possible structures. An example like *the cook, the thief, his wife, and her lover*, on the other hand, is not ambiguous because of the location of the single coordinator. This can only be a multiple coordination with all four conjuncts on the same level.

The endocentric nature of coordination means that for any syntactic theory, the standard rules for describing syntactic structure will not apply to coordination. For this reason, all syntactic theories propose a special method or rule for coordination. Moreover, since coordination applies to such a wide range of categories, coordination rules tend to be stated in terms of either very underspecified categories or variables ranging over any category. A phrase structure rule for generating coordinate structures is given in (9) and in published treatments of coordination, no matter which syntactic theory the treatment is couched in, a rule very similar to (9) will usually be found (for instance, Chomsky 1957: 36; Jackendoff 1977: 51; Hudson 1984: 221; Gazdar, et al. 1985: 171; Steedman 1990: 215).

$$X \rightarrow X \text{ and } X \quad (9)$$

The rule in (9) conveys the information that two instances of the same category may be linked together along with *and* and the result will be a category of the

same type. Such a rule is, of course, both too constraining (it only allows binary coordination with *and*) and not restrictive enough (it allows any two instances of a category to coordinate even though some such coordinations are not possible). The rule is a starting point, however, on which further refinements can be built.

An initial refinement concerns the coordinator: there is evidence that coordinators do not attach independently between conjuncts but instead form a structural unit with a conjunct adjacent to them (cf. Schachter 1985: 47). In English, a coordinator forms a constituent with the conjunct that it precedes and this constituency can be reflected by replacing (9) with the two rules in (10):

$$\begin{aligned} X &\rightarrow X [X \text{and}] \\ X [X \text{and}] &\rightarrow \text{and } X \end{aligned} \quad (10)$$

There is a clear correlation between the basic word order of a language and the position of the coordinator: in nonverb-final languages (such as English) coordinators precede their conjuncts while in verb-final languages (such as Japanese and Turkish) they follow them. The Turkish example in (11) (from Schachter 1985: 47) illustrates this point:

$$\begin{aligned} \text{Şapkanı da paltonu da giy} & \quad (11) \\ \text{your hat and your coat and wear} \\ \text{'Wear both your coat and your hat'} \end{aligned}$$

To describe the verb-final pattern, the order of the daughters in the second rule in (10) would need to be reversed.

Some other languages have coordinator morphemes (for example *-que* in Latin) which occur not as separate words but as clitics attaching to one of the words of the conjunct they are associated with. In this case there can be no doubt that each coordinator is most closely connected to just one conjunct.

## 2. Constituent Coordination

'It is generally claimed that when constituents coordinate, the syntactic category of the conjuncts and of the coordination as a whole must be the same and, most usually, this is indeed the case. A closer investigation, however, would seem to suggest that the nature of the similarity between the parts of a coordinate structure is much more subtle than simply identity of syntactic category. The oddness of examples such as the ones in (12)–(16) seems to suggest that there is also a strong preference for conjuncts to have the same function (or thematic role) (see *Functional Relations*). This preference can be overridden in order to achieve a particular, often humorous, effect—the stylistics literature uses the terms 'zeugma' and/or 'syllepsis' to refer to the deliberate use of examples such as (12)–(16):

$$\text{Fay eagerly and probably went to the dance.} \quad (12)$$

$$\text{Kay made a fortune and a scene.} \quad (13)$$



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- May spoke with Ray and with eloquence. (14)  
 Ray and the squid salad upset Fay. (15)  
 May left Kay in the theatre and in a hurry. (16)

It has been suggested that functional identity might be a sufficient requirement on the conjuncts (cf. Dik 1980) but there are several cases where functional identity appears to be insufficient—a failure to be syntactically alike would seem to be the only explanation for the ill-formedness of examples such as the following (17)–(19):

- \*Waterskiing and to climb mountains can be fun. (17)  
 \*Kay is happy for May to stay over and that Fay isn't here. (18)  
 \*He cooked and fed the chicken to the others. (19)

While the examples in (17)–(19) seem to suggest that conjuncts must be alike in category, there are some frequently cited apparent exceptions to this rule. In certain positions in some sentences it is possible for coordinations of unlike categories to occur felicitously. The verbs *be* and *feel* in (20) and (21) are verbs which are able to occur with any kind of predicative category as a complement (*be/feel stupid, a fool, under the weather*). As the examples in (20) and (21) demonstrate, it is possible for any of these predicative complements to coordinate with any of the others, irrespective of whether they are NPs, APs, or PPs.

- Fay is a legal wizard but expensive to hire. (20)  
 (NP and AP)  
 Kay felt both stunned and on top of the world. (21)  
 (AP and PP)

In a similar vein, verbs such as *ask* and *know* may occur either with an NP complement or with an indirect question complement, and as (22) and (23) show, coordinations which mix these complements are well-formed.

- Ray was asked his age and whether he was married. (22)  
 (NP and S)  
 He knew neither his name nor where he came from. (23)  
 (NP and S)

A third example of coordination of unlike categories occurs with adjuncts with an adverbial function. These may have the syntactic form of an adverb phrase, a PP, or an NP and coordinations of such adjuncts may contain conjuncts with differing categories:

- May works efficiently and with enthusiasm. (24)  
 (AdvP and PP)  
 He'll arrive either in the morning or next week (25)  
 (PP and NP)

The existence of examples of mixed category coordination may seem to require that one abandons the

assumption that only like categories can coordinate, but this would be wrong since it is only in a limited number of environments that mixed coordinations can appear. Attempts to place the coordinations in (20)–(25) in other environments lead to ungrammaticality—\**Kay found a legal wizard but expensive to hire*. It is now generally accepted that what is really needed is a better definition of 'like category.' The conjuncts in the examples in (20)–(25) are similar to a certain extent: the ones in (20) and (21) are all predicative, the ones in (22) and (23) are questions, and the ones in (24) and (25) have an adverbial function. Gross category membership does not provide fine enough distinctions to capture an appropriate notion of likeness but developments in syntactic feature theory (as, for example, in GPSG have shown that finer distinctions are possible. In Gazdar, et al. (1985) categories are described as sets of feature-value pairs and the only requirement on coordinate structures is that the feature specification on the mother node of a coordination should be the 'generalization' of the features on the conjuncts (generalization is broadly equivalent to set intersection). This means that it is possible to build a piece of tree structure for the coordination of any two categories but the more unlike the categories are, the more underspecified the mother will be. Since most rules require rather fully specified daughters, there will be only a few positions where such trees will be able to occur—one of these positions is after verbs such as *be* and *feel* which require only that their complement should be predicative.

The theory of GPSG has not been much developed beyond 1985 but Head-Driven Phrase Structure Grammar (HPSG: Pollard and Sag 1987, 1994) has adopted a similar approach to coordination. Moreover, feature-based unification grammars are still commonly used in the field of computational linguistics and thus the GPSG account of coordination is still common currency.

As the GPSG analysis suggests and as the examples in (20)–(25) seem to indicate, an assumption that the overall coordination is of the same type as the conjuncts is not strictly correct. A coordination of, say, an NP and a PP, is itself neither an NP nor a PP—it is some kind of underspecified category whose only attributes are whatever the NP and the PP have in common. It has been noted by Pullum and Zwicky (1996) and Ingria (1990) that the underspecified categories resulting from coordination do not always interact correctly with agreement phenomena and Bayer and Johnson (1995) have claimed that Morrill's (1992) variant of Lambek Categorical Grammar is better able to account for certain problematic examples. There are other examples where the category of the overall coordination is not precisely identical to the categories of the conjuncts. One of the most problematic cases concerns person and number

in coordinations of NPs. NP conjuncts may differ with respect to their person and number attributes—a singular NP may coordinate with a plural one; a first person NP may coordinate with a third person one. The resulting coordinated NP has person and number attributes in its own right but the values for these attributes are not simply derivable as a function from the attributes on the conjuncts. The nature of the coordinator must also be taken into account: in English a conjunctive coordinator like *and* causes the whole coordination to be plural whether the conjuncts are singular or plural (26); but a coordination with a disjunctive coordinator such as *or* can be singular if all the conjuncts are singular but it must be plural in all other cases (27):

- (a) The food mixer and the coffee grinder are/\*is in (26)  
that cupboard.  
(b) The carrots and the cauliflower are/\*is on the table.  
(a) The food mixer or the coffee grinder are/is in (27)  
that cupboard.  
(b) The carrots or the cauliflower are/\*is on the table.

Moreover, examples like *bacon and eggs is bad for you*, where the usual plural expectation is overridden, would seem to suggest that number is not a purely syntactic phenomenon and that semantic considerations must be part of the equation. The calculation of person in coordinations seems to be even more complex and speakers of English may be unsure which is the better of *you or he is wrong* (third person) and *you or he are wrong* (second person).

Not all syntactic theories attempt to provide a precise mechanism for calculating how a coordinate NP acquires its values for person and number. Feature-based syntactic theories must do so but because this is not a simple case of feature inheritance, they experience difficulty in finding a mechanism that accurately reflects the data. GPSG has made the greatest headway in this respect—see Sag, et al. (1985), and Warner (1988). It should be noted that languages may differ in the way values for person and number on coordinate NPs are calculated. In English, values for number depend on whether the coordinator is conjunctive or disjunctive, but in Dutch, the number value of a coordination is plural even with a disjunctive coordinator. In many languages the verb can simply agree with the nearest conjunct—Corbett (1983) provides several examples. In such cases it is not clear whether a value for the entire coordination needs to be calculated at all.

There are a few cases in English of sentences in which the word *and* appears but which cannot really be said to be cases of coordination. Such cases have been termed ‘pseudo-coordination’ or ‘asymmetric coordination’ and are illustrated in (28)–(29):

- Fay went and bought a new car. (28)  
He wouldn’t even try and help. (29)

In these examples, the presence of the *and* + VP sequence is specifically licensed by the verbs *go* and *try* and one has the sense that these are idioms rather than productive constructions. Equivalent examples with other verbs, for example, *he laughed and bought a new car*, are clearly much more like straightforward coordinations of VPs. GPSG is able to generate examples such as (28) and (29) by allowing the verbs *go* and *try* to subcategorize for a single conjunct as a complement.

### 3. Coordination and Extraction

Coordination interacts in an interesting way with the process known as ‘extraction’ (also known as ‘WH-movement’ or ‘unbounded dependency formation’). Extraction causes a constituent of a sentence to occur in a displaced position, as with the examples of topicalization and WH-question formation in (30) and (31) (the displaced constituent is italicized, an underscore indicates the extraction site):

*Nuclear physics*, I’ve never understood \_\_\_\_\_. (30)

Who did Fay send a letter to \_\_\_\_? (31)

Certain constituents in sentences are known as ‘(extraction) islands’ because it is impossible to displace constituents which occur inside them. Relative clauses, the sentential complement of an NP and *whether* clauses are all examples of extraction islands. As first noted by Ross (1967), coordinate constructions are also extraction islands, as the examples (32) and (33) indicate:

\**Nuclear physics*. I’ve never understood organic (32)  
chemistry and \_\_\_\_.

\*Who did Fay send a letter to \_\_\_\_ and forget all (33)  
about it?

From (32) it is clear that the extraction of a whole conjunct is ill-formed, and from (33) it can be observed that extraction of a part of a conjunct is also ill-formed. Ross described the island nature of coordinations by means of the ‘coordinate structure constraint’: ‘In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct’ (1967: 89). However, Ross also observed that there were, in fact, some exceptions to the coordinate structure constraint: an extraction of a subpart of a conjunct is well-formed if a similar extraction occurs in all the other conjuncts as well. These were termed ‘across-the-board’ exceptions by Ross (see also Williams 1978) and are illustrated by the examples in (34) and (35):

*Nuclear physics*, Fay wants to study \_\_\_\_ and May (34)  
wants to drop \_\_\_\_.

Who did Fay send a letter to \_\_\_\_ and receive a (35)  
reply from \_\_\_\_?

At the time of Ross's observations both the island nature of coordinate structures and the across-the-board exceptions were somewhat mysterious and difficult to explain. Early versions of GPSG (e.g., Gazdar 1981) give quite a convincing analysis where the across-the-board pattern simply follows from the assumption that only like categories coordinate. Assuming a sophisticated featural description of categories and also assuming that the presence of an extraction site (or 'gap') is encoded as part of the feature description, it follows that the conjuncts will only be sufficiently alike and able to coordinate if either all of them contain gaps or none of them do. A later version of GPSG (e.g., Gazdar, et al. 1985) does not require that the conjuncts must be alike but the 'all or none' pattern of distribution of gaps is predicted if coordinate structures are thought of as multiply headed. Both versions are able to ensure that the gap is the same kind of gap in all conjuncts: examples such as *\*On whom does Fay rely—and Kim dislike—*are excluded because the first conjunct has a PP gap and the second an NP gap.

CCG provides a similar and equally interesting analysis of extraction and coordination (see Steedman 1985, 1990). Here, as a result of including 'composition' as a method of combination, sequences which in phrase structure grammar would be thought of as incomplete constituents can be given an analysis and coordinated before they combine with the extracted element. A sequence which is a complete constituent may not be coordinated with an incomplete one since these are different categories—thus the across-the-board restriction is a consequence of this account as well. For example, the sequences *likes Fay* and *hates May* both have the category S\NP and can therefore be coordinated as in *Ray likes Fay and hates May*. The sequence *hates \_\_\_\_\_*, on the other hand is of category S\NP/NP and cannot be coordinated with an S\NP to give *\*May, Ray likes Fay and hates \_\_\_\_\_*. A S\NP/NP can be coordinated with another S\NP/NP, however, to allow a well-formed across-the-board extraction: *May, Ray likes \_\_\_\_\_ and hates \_\_\_\_\_*.

There are some sentences which appear to be counter examples to the across-the-board requirement on extraction out of coordinate structures. The following examples are taken from Goldsmith (1985) and Lakoff (1986) respectively and they show that extraction from either just the left or just the right conjunct is occasionally possible. It has proved difficult to state the conditions under which such exceptions to the across-the-board pattern may occur.

How much can you drink \_\_\_\_\_ and not end up with  
a hangover the next morning? (36)

Sam is not the sort of guy you can just sit there  
and listen to \_\_\_\_\_. (37)

Discussion about extraction often restricts itself to 'leftward extraction,' since this is the usual direction

of extraction in English (all the displaced constituents in the examples above occur to the left of the extraction site). Arguably, cases of 'rightward extraction' also occur and it has been claimed that one of these, known as 'right node raising' (RNR) occurs with coordinate structures (the name originates from early transformational grammar). Examples of RNR can be analyzed simply as the mirror image of across-the-board leftward extraction—the only difference would be that the displaced constituent occurs at the right rather than the left. Some RNR parallels of (34) and (35) are given in (38) and (39):

Fay wants to study \_\_\_\_\_ and May wants  
to drop \_\_\_\_\_ *nuclear physics*. (38)

Fay sent a letter to \_\_\_\_\_ and received a reply  
from \_\_\_\_\_ *a famous politician*. (39)

A rightward extraction account of RNR seems useful for many cases but there are some examples which indicate that perhaps a different analysis is needed. These examples look like RNR except that the material in rightmost displaced position is a nonconstituent sequence, for example the NP-PP sequence, *the letter to the politician* in (40):

Fay wrote \_\_\_\_\_ and Kay sent \_\_\_\_\_ *the letter to the*  
*politician*. (40)

One of the fundamental characteristics of extraction is that it affects only complete constituents so the example in (40) presents insurmountable difficulties to an extraction account. For this reason it is probably advisable to abandon an extraction account of both the single constituent and the constituent sequence examples of RNR in favor of treating them along with examples of nonconstituent coordination.

#### 4. Nonconstituent Coordination

Although it is generally assumed that coordination affects only complete constituents, English and other languages contain a number of coordinate constructions where the conjuncts are not constituents in the normal sense but are sequences of constituents. A general term for such constructions is 'nonconstituent coordination.' Other terms are 'reduced coordination,' 'incomplete conjunct coordination,' 'conjunction reduction.' The individual constructions which are grouped together as nonconstituent coordination have been much discussed and classified in syntactic theory and many competing terms are used to describe them. The precise nature of these constructions is still rather obscure and it is not clear that a completely coherent classification of them has ever been proposed. One possible classification is presented here with indications of some of the alternative names for each type:

(a) 'Gapping in S coordinations' (also known just as 'gapping,' or as 'verb-medial gapping'):

- (a) L Fay studies art, Kay, music and May, history. (41)
- (b) Harry has sent a letter to Fay, and Barry, a postcard to Kay.
- (c) May will try to remember to go, and Kay, to get there on time.
- (b) 'Gapping in VP coordinations'.
- (a) Kay may go to Leeds tomorrow and to Birmingham next week. (42)
- (b) Harry sent a letter to Fay and a postcard to Kay.
- (c) 'Right node raising in S coordinations' (also known just as 'right node raising,' or as 'shared constituent coordination'):
- (a) Fay adores, but Kay hates, medieval history. (43)
- (b) Fay composed, and Kay posted, a letter to Harry.
- (d) 'Right node raising in VP coordinations':
- (a) May found, and started to repair, the antique clock. (44)
- (b) Kay set out to meet, but managed to miss, her brother at the station.

On a purely descriptive level, it is useful to think of these constructions as just like constituent coordinations except that there is material missing from one or both conjuncts. This amounts to viewing nonconstituent coordination as ellipsis. With gapping the first conjunct is complete but the second and subsequent conjuncts have a part missing. The conjuncts are parallel in structure and the antecedent of the missing material is found in the first, complete, conjunct. The missing material is at least the finite verb and is often a sequence made up of the finite verb and immediately adjacent words: in (41a), *studies* is missing from the second and third conjuncts, in (41b), the sequence *has sent* is missing from the second conjunct. Example (41c) is ambiguous with respect to the missing material: on one interpretation what is missing is *will try to remember* and on the other interpretation it is just *will try*.

The examples of gapping in VP coordinations are much like the examples in (41) except that one must assume that these involve coordinations of VPs rather than S. Note that the classification of these as gapping is not uncontroversial: many authors would group examples such as (42a) and (42b) with cases of RNR and would reserve the term 'gapping' exclusively to describe examples where the missing material is clearly in the middle of a constituent rather than at the leftmost edge. The classification used here is based on the observation that in both cases it is the finite verb which is missing.

The examples of RNR in (43) and (44) involve material missing from the right-hand side of the first conjunct, and on intonational criteria, it could be said to

be missing from the right-hand side of the second conjunct as well—a distinct prosodic break occurs in the position of the second comma in the orthography. The material that follows the comma, whether a single constituent or a sequence of constituents, is interpreted as the material missing from the first conjunct. The examples in the two groups differ only in that, in the first, the basic coordination is an S (i.e., each conjunct has its own subject), while in the second, the coordination is of VPs (the two conjuncts share a subject).

Some other examples of coordination with parts missing from conjuncts are not usually discussed as being instances of nonconstituent coordination. The examples in (45)–(47) illustrate 'VP-ellipsis,' 'sluicing,' and 'stripping' respectively. Since these can all occur in structures other than coordinate structures, they are usually not thought to be part of the syntax of coordination. Instead they are thought of as a kind of 'anaphora' (see *Anaphora*) or 'ellipsis.'

Fay said she was sorry and she was. (45)

Kay has turned down the offer and she won't say why. (46)

Ray thought the theory unexciting and possibly, wrong. (47)

Nonconstituent coordination is seriously problematic for almost all syntactic theories. Any theory which places strong emphasis on a rigid definition of the notion constituent (as, for example, phrase structure theories do) will find it particularly difficult to explain how sequences which would not normally be considered to be constituents can occur as conjuncts in coordinate structures. A phrase structure theory such as GPSG is able to account for some of the possibilities so long as the missing material is both a single constituent and occurs peripherally in the conjunct. In these cases it can propose across-the-board extraction—either right node raising (Gazdar 1981) or left node raising (Schachter and Mordechai 1983) of a single constituent. In all other circumstances it can provide no real solution. CCG has a much less restrictive view of what counts as a constituent: as a result of adding 'type raising' and 'composition' to a basic categorial grammar almost any two constituents, so long as they are adjacent, can be combined to form a new constituent. This means that CCG has a quite natural account of both the single and the multiple constituent cases of RNR and an account of VP gapping. Gapping in S coordinations is still a problem because the shared material occurs in the middle of one of the conjuncts rather than at a leftmost or rightmost edge. However, Steedman (1990) points the way to a possible solution. Coordination is a major motivation for including certain modes of combination in CCG but an concomitant of this is that many quite innocent sentences receive large numbers of distinct analyses.



The CCG analysis of gapping outlined in Steedman (1990) attempts to treat gapping in English as essentially similar to other cases of nonconstituent coordination, even though the gapping case is the only one where the shared/missing material is not peripheral. There is considerable cross-linguistic evidence that this is a correct assumption and that it is simply an accident of English word order that the shared/missing material is medial and not peripheral. Many other languages have gapping constructions and the position of the shared/missing material seems to be dependent on the basic word order of the language. In a verb-final language such as Japanese, as illustrated in (48) (taken from Ross 1970: 251), the shared material is right peripheral and occurs in the final conjunct. Unlike English, it is the first conjunct from which the verb is missing:

watakusi wa sakana o, Biru wa gohan (48)  
 o tabeta  
 I PRT fish PRT, Bill PRT rice  
 PRT ate  
 'I ate fish and Bill, rice'

Dutch, like other Germanic languages, has verb-final word order in subordinate clauses but verb-second order in main clauses. As the examples in (49) and (50) illustrate, with gapping in subordinate clauses, Dutch allows the verb to be missing either from the final conjunct or from the first: that is, it appears to allow both the Japanese pattern and the English pattern:

(ik denk dat) Jan bier en Henk wijn drinkt (49)  
 (I think that) Jan beer and Henk wine drinks  
 '(I think that) Jan drinks beer and Henk, wine'

(ik denk dat) Jan bier drinkt en Henk wijn (50)  
 (I think that) Jan beer drinks and Henk wine  
 '(I think that) Jan drinks beer and Henk, wine'

This suggests quite strongly that verb-medial gapping, verb-final gapping, and other kinds of nonconstituent coordination such as RNR are essentially the same phenomenon and should be given a unified treatment.

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## Coreference

R. A. Muskens

The relation of *coreference* obtains between two expressions if and only if they denote the same individual. Thus the name *Mont Blanc* and the definite description *the highest mountain in Europe* corefer. If two English noun phrases *A* and *B* both denote an individual, they are coreferential if and only if the sentence *A is B* is true.

In mathematical languages and in predicate logic coreferential terms can be interchanged in any sentence without altering the truth value of that sentence. Replacing  $3 + 5$  by  $12 - 4$  in any formula of arithmetic will never lead from truth to falsity or from falsity to truth. But natural languages are different in this respect. While in some contexts it is always allowed to interchange coreferential terms, other contexts do not admit this. An example of the first sort of context is—*likes bananas*: for any two coreferential noun phrases *A* and *B* the sentence *A likes bananas* is true if and only if *B likes bananas* is. A context that does not allow intersubstitution of coreferents is *The Ancients knew that—appears at dawn*. If we fill the hole with the noun phrase *the Morning Star* we get the true (1a), while if we plug in *the Evening Star* we get the false (1b). Yet *the Morning Star* and *the Evening Star* both refer to the planet Venus and are thus coreferential:

*The Ancients knew that the Morning Star appears at dawn.* (1a)

*The Ancients knew that the Evening Star appears at dawn.* (1b)

Contexts in which coreferential terms are not always

inter-changeable without altering truth value are called *opaque*; if a context is not opaque it is *transparent*. The example above shows that verbs of propositional attitude like *know* can give rise to opaque contexts, but many other constructions can as well. In (2), for example, we see that replacing *Noam Chomsky* by a coreferential description may lead from truth to falsity if the name occurs in the scope of a temporal adverbial. Example (3) shows that a modal operator can have the same effect: substituting *Neil Armstrong* for a description that denotes the same person leads from a true statement to one that presumably is false:

*In 1950, Noam Chomsky was Noam Chomsky.* (2a)

*In 1950, Noam Chomsky was the author of Syntactic Structures.* (2b)

*Neil Armstrong might not have been the first man who walked on the moon.* (3a)

*Neil Armstrong might not have been Neil Armstrong* (3b)

The fact that predicate logic is completely transparent, while opacity is the rule rather than the exception in English, seems to imply that predicate logic is not the right vehicle for describing the semantics of English. Many semanticists therefore conclude that, in order to model the logic of English, special logics should be applied that have opaque contexts themselves. These so-called *intensional* logics may contain temporal and modal operators and operators of propositional attitude, and are thus closer to the structure of English than ordinary predicate logic is.

## Counterfactuals

F. Veltman

Like most proverbs, the proverb 'If ifs and ans were pots and pans, there would be no need for tinkers,' suggests a moral. Surely, when some practical decisions have to be made here and now, there is no use in pondering how beautiful things would have been if only this or that had been the case. Still, the proverb does not do justice to our otherwise rather complicated relation to the past. Sometimes it is appropriate to utter a sentence of the form *If it had been the case that ... then it would have been the case that ...*. Could a decision ever be regretted if one had no reason to

believe that it would indeed have made a difference if it had been decided otherwise? And would it ever be justified to call someone to account for his deeds, if everything would be exactly the same as it is now no matter what had been done by whom? Clearly, one does often reason about unactualized possibilities, thereby employing so-called counterfactual conditionals.

If she had asked me, I would have danced with her. (1)

Counterfactuals are typically uttered in contexts

## Counterfactuals

where the antecedent is known to be false. Therefore, unlike indicative conditionals (see *Conditionals*), they cannot possibly be analyzed as material implications. Material implications with a false antecedent are true no matter what the truth value of the consequent is. But one does not want to be forced to call both sentences (1) and (2) true:

If she had asked me, I would not have danced with her. (2)

### 1. The Metalinguistic Approach

Taken at face value, counterfactuals refer to unactualized possibilities—a kind of entities that philosophers, in particular those standing in the empiricist tradition, look upon with suspicion. Accordingly, several attempts have been made to show that counterfactuals are only apparently about unactualized possibilities, and to give a logical analysis of their meaning in which no recourse to such entities is made. The *locus classicus* here is Goodman 1947. On Goodman's account a counterfactual *If A had been the case, C would have been the case* can best be thought of as a metalinguistic statement expressing that the antecedent A together with some suitable further premises  $B_1, \dots, B_n$  logically implies the consequent C.

Which further premises  $B_1, \dots, B_n$  are suitable to be used with a given antecedent? Obvious candidates to consider are sentences that express causal connections or other lawlike relationships between matters spoken of in the antecedent and matters spoken of in the consequent. We believe that John would have fallen to the ground, if he had jumped out of the window, and we appeal to a very simple form of the laws of motion to prove our point.

Natural laws are not the only further premises one needs. There are no natural laws establishing a connection between the antecedent and consequent of the next sentence:

If I had looked in my wallet, I would have found a penny. (3)

This statement may very well be true just because there happened to be a penny in my wallet at the occasion I am referring to. Hence, in addition to natural laws also accidental truths have to be allowed as further premises.

The obvious next question is which accidental truths can serve as further premises and which cannot. Not everything goes. For one thing, we wouldn't want to allow the negation of the antecedent as a further premise even though the antecedent, together with its negation, implies the consequent. But where do we have to draw the line? The only natural answer to this question seems to be this: those accidental truths  $B$  for which the sentence *If A had been the case, B still would have been the case* is true. But as Goodman acknowledged, this answer turns the analysis into a circular one.

### 2. Minimal Change Theories

In 1968 Robert Stalnaker proposed an account of counterfactuals in which no attempt was made to explain away the reference to unactualized possibilities. Starting point for his analysis was a test for evaluating the acceptability of conditionals originally devised by Frank Ramsey. It can be summed up as follows:

First, hypothetically, make the minimal revision of your stock of beliefs required to assume the antecedent. Then, evaluate the acceptability of the consequent on the basis of this revised body of beliefs.

Ramsey's original suggestion only covered the case in which the antecedent is consistent with the agent's stock of beliefs. In that case, which is typical of indicative conditionals, no adjustments are required. Following an idea of Rescher 1964, Stalnaker generalizes this to the case in which the antecedent cannot simply be added to the agent's stock of beliefs without introducing a contradiction. In this case, which is typical of counterfactuals, adjustments are required.

In effect what Stalnaker does is reconstruct the above belief conditions as truth conditions. He thinks that truth may not be allowed to depend on beliefs, that you have to appeal to the facts. So, in his rebuilt version the *actual world* plays the role that the agent's stock of beliefs plays in Ramsey's. And the minimal revision of the agent's stock of beliefs required to assume the antecedent is taken up as that possible world at which, (a) the antecedent is true and which (b) in all other respects differs minimally from the actual world.

This proposal raises an immediate question: Which of the conceivably many possible worlds at which the antecedent is true will be the world most similar to the actual world? According to Stalnaker, this is in essence a pragmatic question which has little to do with the semantic problem he is concerned with. He is ready to admit that contextual features may make a difference to the particular world which has the property concerned. But how these contextual features make that difference is less important, the only thing that matters is that there is an outcome.

Note that Stalnaker assumes that there will always be one unique antecedent world most resembling the actual world. But can we really be sure of this? Will there always be, for any antecedent  $A$  at most one  $A$ -world most resembling the actual world? Couldn't there be cases where we have several such  $A$ -worlds, all equally close to the actual world and all closer to the actual world than any other world? In Lewis 1973 the following examples are given to show that such cases really do exist:

If Bizet and Verdi had been compatriots, Bizet would have been Italian. (4)

- If Bizet and Verdi had been compatriots,  
Verdi would have been French. (5)

Because of the uniqueness assumption, Stalnaker's theory does not admit a situation in which both (4) and (5) are false while (6) is true:

- If Bizet and Verdi had been compatriots, either  
Verdi would have been French or Bizet  
would have been Italian. (6)

According to Lewis one can accept (6) without having to accept (4) or (5), and so he rejects the uniqueness assumption. There are more variants of Stalnaker's theory on the market. They differ from each other mainly in assigning slightly different properties to the underlying comparative similarity relation of worlds, thus giving rise to slightly different conditional logics.

In Tichy 1976 an objection is raised against Stalnaker's theory which applies to other versions of the 'minimal change' paradigm as well. The argument runs as follows: 'Consider a man—call him Jones—who is possessed of the following dispositions as regards wearing his hat. Bad weather invariably induces him to wear a hat. Fine weather on the other hand, affects him neither way: on fine days he puts his hat on or leaves it on the peg, completely at random. Suppose moreover that actually the weather is bad, so Jones is wearing his hat ...' What is the truth value of the following counterfactual?:

- If the weather were fine, Jones would be wearing  
his hat. (7)

Intuitively, this sentence is false—if the weather were fine, Jones might very well not be wearing his hat. But according to the theories mentioned above it is true. After all, it would seem that worlds where Jones keeps his hat on are at least in one respect more like the actual world than worlds where he takes it off.

The advocates of the minimal change approach are of course not ready to admit this. According to them the example shows at best that not all characteristics of the actual world are relevant in assessing which worlds resemble it more than which other worlds. The obvious next question—which characteristics are relevant and which are not?—is usually delegated to pragmatics.

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## Definiteness

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Definiteness is the category which distinguishes a definite noun phrase like *the house* from an indefinite one like *a house*. *The* and *a* are, respectively, the definite and the indefinite article. But it is no simple matter to state just what the difference in meaning is between *the house* and *a house*, and indeed there is no general agreement among linguists on what definiteness amounts to. This question is examined here, as is the question of what makes a noun phrase definite or indefinite—since noun phrases need not involve an article. Indeed most languages do not have articles, and it is a matter of debate whether definiteness occurs in all languages or only in the minority having expressions corresponding to the English articles.

### 1. What is Definiteness?

Most investigators assume definiteness to be a semantic or pragmatic category—thus, an element of meaning—which constitutes the lexical content of the definite article *the*. The alternative view is that definiteness is a grammatical category (like tense, person, or number) which need not consistently express a single semantic property, and which happens in English to have a separate word rather than an inflection as its exponent. On the first view, the problem is to establish what this element of meaning is. There are two general lines of thought on this. The first, usually termed the 'familiarity hypothesis', tends to appeal mainly to linguists working in pragmatics or aspects

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of discourse. The second, the 'uniqueness hypothesis', is dominant among those working in logic and formal semantics.

### 1.1 Familiarity and Identifiability

The familiarity hypothesis says that a definite noun phrase indicates that the referent is already known, in some sense, to the person addressed. This might be because it has already been mentioned in the discourse. For example, where a particular house has already figured in a conversation, one of the participants might go on to say *The house was built over a century ago*. The house is familiar from previous mention, so is referred to with a definite noun phrase. This is the *anaphoric* use of *the*, and is assumed by some linguists to be the paradigm use of the definite article. Notice that the indefinite *a house* would typically occur where the house in question is not familiar to the addressee and is being newly introduced to the discourse, as in *I went to have a look at a house this morning*. The anaphoric use of definites is not the only one, however, and the concept of familiarity seems to be adequate for a number of other usage types. In some *situational* uses, the referent is known by the addressee to be present in, or form part of, the discourse situation. For example, in a particular country, mention of *the government* would typically be taken to be a reference to the government of that country; and if a woman tells her husband one morning that it is his turn to clean *the bathroom*, he will assume she means their own bathroom, the one forming part of their living situation, not some other. In *general knowledge* uses, mention of *the equator* or *the Pope* involves reference to a unique entity known by the addressee to exist (though not necessarily familiar to him personally). The *associative* or *bridging cross-reference* use can be thought of as a combination of the anaphoric and general knowledge uses. This is where reference is made to something known to the addressee to be associated with something previously mentioned. So where a ride in a taxi has been mentioned, it is possible to go on to speak of *the seats*, *the driver*, *the fare*, using definite noun phrases. The association between these things and taxis makes them in a sense familiar once the latter has been introduced into the discourse. For an excellent survey of the various usage types of the English definite article see Hawkins (1978).

It is important to note that the familiarity required for a definite to be appropriate is to the addressee, not the speaker (or writer, etc). Familiarity to the speaker is not enough to licence definiteness. This is clear from sentences like *When you go shopping get me a toothbrush* and *I bought myself a toothbrush last week*. In the first, the speaker is clearly not referring to a particular toothbrush; indeed the indefinite noun phrase *a toothbrush* here cannot be said to have a referent, and certainly not a familiar one. In the

second sentence, however, the speaker has a particular toothbrush in mind, one that must be familiar to her. But in both cases an indefinite is used, because there is no reference to an entity familiar to the addressee. The contrast exemplified in these two sentences, where an indefinite noun phrase may or may not denote something familiar to the speaker, is expressed in the distinction between *specific* and *non-specific*. A specific indefinite is one for which the speaker has a particular referent in mind—but where familiarity to the addressee does not hold. It is important therefore not to confuse specificity with definiteness (though there are some instances of this confusion in the linguistics literature). At the same time, it is worth noting that some languages (like Maori and others of the Austronesian family) seem to treat definites and specific indefinites together, having a 'definite' article which is used with both. In other languages definites and specific indefinites are treated similarly in some but not all respects. This has led to the suggestion that there is a cline of specificity-definiteness, with non-specific indefinites at the bottom, specific indefinites in the middle, and definites at the top as most specific-definite. There is a huge literature on the topic of specificity, and a great deal of disagreement on how it is to be characterized.

Some occurrences of *the* indicate that the concept of familiarity is too narrow, and that something like *identifiability* is the correct criterion. Thus, the addressee may not necessarily know the intended referent of the definite noun phrase, but can work out with some inferencing what it is. Imagine, for example, an immediate situation use, where speaker and addressee are in a room which the latter is visiting for the first time. The speaker says *Would you put this plant pot on the bookshelf for me?* The bookshelf in question is not familiar to the addressee, but he looks around and quickly spots it. Even if there are two bookshelves in the room, but one of them clearly unsuitable for the purpose (because full, or too narrow, for example), the addressee will correctly identify the shelf intended and the definite reference will be successful. Similarly, to take a wider situation use, suppose the following is uttered in the context of a small village: *I'll meet you outside the chemist's shop at three*. The addressee is new to the village and does not know it has a chemist's. But he may well be happy to assume that he will have little difficulty in finding it, and again the definite reference will be successful.

### 1.2 Uniqueness and Inclusiveness

According to the uniqueness account, definiteness indicates that there is only one potential referent for the noun phrase. That is, there is only one entity in the domain of discourse which matches the descriptive material in the noun phrase. So the above reference to *the chemist's shop* works, not because the addressee will manage to find it, but because there is only one



such shop in the village. In cases like this, both identifiability and uniqueness seem reasonable, and indeed to work together, since the fact of there being only one chemist's is crucial to the addressee's being able to identify the right shop. But there are usage types for which identifiability does not work.

*Intensional* uses are those in which a referent is potential rather than actual, as in *The man who comes with me will be richly rewarded* or *I'm looking for the office manager, but I've no idea who it is*. In the first case there is no man yet meeting the description, and possibly none will accompany the speaker; in the second, there is presumably some individual meeting the description *office manager*, but there is not necessarily any expectation that the addressee knows who it is. But in both cases the use of *the* is quite normal. Identifiability does not seem an appropriate criterion here, and uniqueness works better. The implication is that one man will or may accompany the speaker, and that there is just one office manager, whoever it is.

This approach is supported by the fact that a number of noun modifiers which seem to have an element of uniqueness as part of their meaning only normally occur in definite noun phrases. Examples are superlatives (like *cleverest*), *same*, *next*. Thus we can say *the cleverest student*, *the same book*, *the next train*, but not *\*a cleverest student*, *\*a same book*, *\*a next train*. The idea is that only a single entity can be described as *cleverest*, *same* or *next*, and that this uniqueness triggers the use of *the*. The indefinite article would imply non-uniqueness, and would therefore clash semantically with the modifier.

The uniqueness hypothesis has a long history in formal logic, but, as it stands, is quite inadequate in an obvious way. It fails totally to account for plural definites (like *the books*) and mass definites (like *the water*). *The books* clearly does not imply that there is just one book, and singularity is not applicable to the likes of water. What seems to be implied in these cases is totality. *Pass me the books* seems to imply that the speaker wants all the books in the context, and *Throw out the water* seems to indicate that the speaker wants all the water in the given situation thrown out. Hawkins (1978) introduces the term *inclusiveness* for this, while others have preferred the term *maximality*; what is meant is that *the* indicates that reference is to all the entities or mass satisfying the description. In fact uniqueness, for singular definites, can be assimilated to inclusiveness, as Hawkins argues: it follows from the inclusiveness requirement of *the* together with the singularity of the noun phrase that the referent must satisfy the description uniquely.

But if certain uses of definites are amenable to an account in terms of inclusiveness but not identifiability, there are some for which the opposite is the case. The example above in which reference was made to *the bookshelf* in a room where there are two book-

shelves simply does not work for inclusiveness, while the identifiability account (on which the addressee works out which of the two is more likely to be the one intended) works well. We are left with a situation in which many definite uses can be handled by either account, while there are some uses for which only identifiability works and others for which only inclusiveness works.

### 1.3 Grammatical and Semantic Definiteness

One way out of this dilemma is to regard definiteness as a grammatical category which need not be semantically uniform in all its occurrences. This view is argued for by Lyons (1999), who points to other instances of grammatical categories not behaving uniformly in semantic terms. For example, grammatical person is generally thought of as expressing the distinctions between the discourse participants of speaker and addressee and entities not participating in the discourse (first, second, and third persons). But in many languages an individual with whom the speaker is on formal rather than familiar terms is addressed using a pronoun, like Spanish *usted*, which is grammatically third rather than second person. Grammatical number is concerned with the distinctions between such categories as singular, dual, and plural. But Lakhota has a first-person pronoun which is grammatically singular (for example, patterning morphologically like other singular pronouns) but is used to denote speaker and addressee. It is 'inclusive first person', corresponding to English *we* where this includes the addressee, and thus seems to be semantically dual.

The point is not that grammatical categories have nothing to do with categories of meaning. One would not want to deny that person has to do with the distinctions between speaker, addressee and so on, or that number relates to such distinctions as that between one and more than one. It is that they are the 'grammaticalization', the representation in grammar, of such categories of meaning, rather than their direct expression. And the correspondence between a grammatical category and the concept it represents need not be exact. In the case of definiteness, it may be, as Lyons (1999) suggests, that identifiability is the concept grammaticalized, and that some occurrences of the category go beyond this concept, in some inclusive uses for example.

A distinction has often been drawn between grammatical and semantic (or perhaps better, pragmatic) definiteness. The former is where definiteness is formally indicated by the definite article (or some other marker); the latter is where this formal marking is absent though the concept of meaning (identifiability or whatever) underlying definiteness does hold. An interesting area for this distinction is that of *generic* noun phrases—those which denote an entire class or 'kind' rather than a particular instantiation of this.



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Examples are:

*Dogs are faithful creatures*  
*A dog is a faithful creature*  
*The dog is a faithful creature*

all of which make a statement about dogs in general as opposed to some instances of the class of dogs. As these examples show, generic reference can be made in English in a number of ways. But it can be argued that the first, involving the 'bare' nominal, with no article, and in the plural if the noun is a count noun, is the typical English generic, because it is available to both count and mass nouns (*Dogs are faithful*, *Butter is nourishing*). This bare generic type involves no marker of definiteness, and so presumably is not grammatically definite. But there is a case for regarding generics in general as semantically definite, in that the criteria for definiteness do seem to hold. First, since a whole kind is denoted, the reference is inclusive. Second, while not all dogs can be familiar to the addressee, the kind or class *dog* certainly is. And indeed, in many languages the typical generic expression is formally definite: French *les chiens* 'dogs', *le beurre* 'butter'. So, in these generics, the English expression is semantically but not grammatically definite, while the corresponding French expression is both semantically and grammatically definite.

The significance of this distinction becomes apparent in relation to so-called *definiteness effects*. These are grammatical or discourse contexts within which a noun phrase is required to be either definite or, conversely, indefinite. An example is the *existential construction* consisting in English of unstressed *there* plus a form of the verb *be*:

*There is a fly on the wall*  
*There were three men waiting*

In this construction the noun phrase following *there be* is normally indefinite; a definite is not totally prohibited, and indeed in certain limited circumstances is perfectly acceptable, but the tendency for a noun phrase in this position to be indefinite is rather strong. The same applies to similar structures beginning with *there* but with a verb other than *be*:

*There came a big spider*  
*There arose a terrible storm*

where *the big spider* and *the terrible storm* would be at least awkward. The verbs which readily occur with *there* in this way are typically those which introduce a new entity into the discourse, and this may be behind the restriction on definites. This restriction is not merely a feature of English, but is found in many languages. And the restriction seems to be, in most if not all languages showing it, on semantic definites, not grammatical ones. Thus, in English, we can have *There are lions in Africa*, but *lions* here is not readily interpreted as generic. On the other hand, *There's that car parked outside* is (at least for many speakers)

awkward, because, as we will see below, *that car* is grammatically definite; but it becomes better if *that car* is interpreted as 'a car of that type', thus semantically indefinite. This definiteness effect in existential sentences is found in many languages lacking a definite article, and therefore arguably lacking the grammatical category of definiteness. In such languages the restriction is generally that the noun phrase involved cannot be understood as familiar or identifiable, nor as generic; thus semantic definiteness is relevant even in languages where there may be no grammatical definiteness.

## 2. Types of Definite Noun Phrase

So far the discussion has been largely limited to definites introduced by the article *the*. But this article is not the only marker of (grammatical) definiteness; it is in fact a member of the larger class of definite *determiners*, which includes demonstratives like *this* and *that*. Definiteness is generally assumed to characterize a range of noun phrase types, which we survey here.

### 2.1 Demonstratives

The definite article, in almost all languages having one, derives historically from an earlier demonstrative, and noun phrases like *this house*, *that problem* are definite, as is clear from their behaviour in definiteness effect contexts. Note that their definiteness probably cannot be accounted for in terms of inclusiveness, since the use of a demonstrative often implies a contrast between the intended referent and some other possible referent. Identifiability seems to be the relevant criterion, since pointing out the referent (which is what seems to happen with demonstratives) clearly makes it identifiable.

In English, the demonstratives form a single paradigmatic class with the definite article; they appear to occupy the same position as the article in the noun phrase and cannot co-occur with it. But in many languages demonstratives are, or may be, accompanied by the definite article. Examples are Irish *an madra sin* (the dog that) 'that dog' and the marked Spanish construction *la casa esa* (the house that) 'that house'. In such cases the point is that the demonstrative is, or can be, in a distinct word class and occupying a different position from the article; in Spanish, for example, the demonstrative is probably adjectival. And where a demonstrative is an adjective rather than a determiner, it is apparently unable to confer on the noun phrase the definiteness appropriate to its meaning, so the article is necessary in addition. Note also that, while many languages have no articles, all appear to have demonstratives.

### 2.2 Personal Pronouns

The personal pronouns *me*, *she*, *they*, etc. behave like complete definite noun phrases (again, in definiteness

effect contexts for example), and for this reason are also often termed 'definite pronouns'. In this they contrast with indefinite pronouns like *someone*, *one*. They are, on the face of it, an odd kind of noun phrase since they contain no noun—though one recent analysis proposes that pronouns are nouns which undergo movement from the noun position to the determiner position within the noun phrase. But another, very influential, and probably better supported, analysis treats pronouns as determiners, differing from other determiners merely in having no accompanying noun, or at least no overt noun. It is widely accepted that the determiner rather than the noun is in fact the *head*, or core element, of the noun phrase (which is therefore, more accurately, a determiner phrase), and on this view there is nothing remarkable in a 'noun phrase' consisting of determiner only.

Pursuing this treatment, the third-person pronouns *he*, *she*, *it*, *they* are the pronominal counterparts of the article *the*. That is, they are themselves forms of the definite article, differing from *the* in that they are not accompanied by a noun. If this idea seems strange, consider the fact that most determiners (for example, *this*, *two*, *all*, *much*, *several*, *each*) can occur either with a noun or alone—that is, as pre-nominal determiners or as pronouns. *The* is unusual in appearing only pre-nominally, and *he*, etc. are unusual in appearing only pronominally. A neat solution to this anomaly is to take all these items to be forms of the same determiner, thus complementing each other. But then what of the first- and second-person pronouns? In fact, to a limited extent, these do appear pre-nominally, in expressions like *we students*, *you people*. So they too can be treated as definite articles, first- and second-person forms of the article. There are some complications, such as the fact that *he*, *we*, *you*, etc. may carry normal word stress (and indeed must in *we students*, *you people*) whereas *the* is normally unstressed. This indicates that in some uses personal pronouns are forms of a demonstrative determiner, since demonstratives do carry normal word stress. But this still means that these pronouns are forms of a definite determiner in all occurrences. For more details of this analysis see Lyons (1999).

### 2.3 Possessives

Expressions like *my house*, *the Bishop's cat* are definite noun phrases, equivalent to something like *the house/cat belonging to me/the Bishop*. According to some linguists, it is the fact that in these examples the possessor (*me*, *the Bishop*) is itself definite which makes the overall noun phrase definite. But this is probably incorrect, since *a neighbour's child*, with an indefinite possessor expression, seems to be also definite, the most natural paraphrase being *the child of a neighbour*. There are some uses in which noun phrases with possessive modification do not behave as typical

definites, for example when predicative, as in *Peter was Anne's student*, where there is no implication that Anne only had one student. But in general, English noun phrases with a possessive modifier are clearly definite and are readily paraphrased by an expression beginning with *the*.

For this reason, pronominal possessives like *my*, *his* etc. and noun phrases with *'s* added have long been regarded as definite determiners. But there is more to it than this. We have seen that demonstratives, which are certainly definite determiners in many languages, are adjectival in some languages, appearing in some position more internal to the noun phrase than that of determiners. In such cases, if the language has a definite article, it too must appear. Now, in many languages possessive expressions too either can or must appear in what looks like an adjectival, rather than determiner, position, again accompanied by the definite article in its normal position. Examples are Italian *la tua casa* (the your house) and the marked Spanish *la casa tuya* (the house your) 'your house'. But, by contrast with demonstratives, such adjectival possessives can also occur with the indefinite article: Italian *una tua casa* (a your house) and Spanish *una casa tuya* (a house your); the sense here is 'a house of yours'. So whereas a demonstrative modifier entails definiteness in the noun phrase, a possessive modifier does not. It is only where the possessive occurs in the position of definite determiners, rather than some other modifier position, that it makes the noun phrase definite. There is nothing in the meaning of possessives constraining the phrase to be definite.

### 2.4 Proper Nouns

Simple proper nouns, such as names of persons and places (*Mary*, *Berlin*), show the behaviour of definite noun phrases in definiteness effect contexts, and indeed they seem to meet the criteria of identifiability and inclusiveness (uniqueness)—for although there are many people called *Mary*, we tend to use such names as if there were, at least in the relevant domain of discourse, only one. In some languages, like Modern Greek, such names are accompanied by the definite article. In most languages, however, they are not. The usual assumption is that proper nouns are in some way inherently definite and therefore do not need the article. But it is not entirely clear what this means; one might expect that if the use of a name were necessarily a definite reference, an accompanying article should be obligatory, not redundant.

One way of approaching this problem is to say that proper nouns, where they do not have formal definiteness marking, in English for example, are semantically but not grammatically definite. In this they resemble bare generics, and indeed generics have been argued to be a kind of proper name (Carlson 1980), and proper nouns to be a kind of generic (Lyons

1999). A very different recent analysis (Longobardi 1994) claims that proper nouns undergo movement from the noun position in the noun phrase to an empty determiner position. They therefore take the role of determiner themselves by occupying this position, and this is assumed to account for their definiteness.

### 3. The Articles

As noted, the English definite article is one of a number of definite determiners, any of which can be used to formally mark a noun phrase as definite. Indefiniteness may be indicated by the indefinite article, but, again, many indefinites have no article; this has led to the assumption that determiners like *many*, *three*, *several* are indefinite determiners. Both articles are normally unstressed, unlike other determiners, and this probably reflects their relative lack of semantic content. They can be thought of as the basic instantiations of their respective determiner classes, occurring where no semantically fuller determiner is chosen.

In many languages the articles take the form of affixes or clitics rather than discrete words, again reflecting their grammatical, as opposed to lexical, status (though it should be noted that possessives are frequently affixal, and demonstratives occasionally are). This is particularly true of the definite article, which is a bound form in Romanian, the Scandinavian languages, Hausa, and many other languages. In some cases this bound article is attached to the noun, but a very common pattern is for the article to be a *Wackernagel* (or second-position) form, attaching suffixally to the first word or constituent of the noun phrase. Where it is a separate word, the definite article seems to always appear in a rather peripheral position in the noun phrase, usually on the left and thus preceding most other elements—as in English. Such free-form articles may carry inflectional information relating to the noun phrase, and in some languages this information is expressed mainly on the article. In German for example, the article can be the principal indicator of the gender and case of the noun phrase. This has led to the claim that the role of the article is to express case, and perhaps other categories, not (or not principally) to express definiteness. But this view does not stand up to close scrutiny. Cross-linguistically, most articles are in fact invariant forms showing no inflection.

The English indefinite article *a* is descended historically from the singular numeral, and, like the numeral *one*, only appears in singular count noun phrases. In the plural and with mass nouns it is replaced by *some*. Cross-linguistically, indefinite articles identical to or derived from the equivalent of *one* are extremely common, and one might wonder why. It may well be that *a* does not in fact express indefiniteness, but rather is a *cardinality* term (expressing quantity or

amount) like the numerals and words like *many*. Noun phrases like *one man*, *many houses* are indefinite, and for this reason words like *one* and *many* have been characterized as indefinite determiners. But this cannot be correct, since they can co-occur with definite determiners: *this one man*, *the many houses*. Rather, what makes *one man* and *many houses* indefinite seems to be the absence of a definite determiner. Generalizing from this, it seems plausible to suggest that presence or absence of a marker of definiteness is what makes a noun phrase definite or indefinite. So *a house* is indefinite because of the absence of *the* rather than the presence of *a*. If this is correct, *a* is a marker of the singular count status of the noun phrase, a kind of weak form of *one*, not a marker of indefiniteness. The main difficulty with this analysis is to account for the impossibility of co-occurrence of *a* and *the*.

There are in fact many languages (like Classical Greek) which have a definite article but no indefinite article, indefiniteness being indicated simply by absence of an article or other definiteness marker. On the other hand, there are some languages which seem to have an indefinite article (typically identical or related to the singular numeral) but no definite article; Turkish is an example. In these languages, a definite interpretation generally follows from the absence of the indefinite article. The status of *a* and its equivalents in other languages, whether as true indefinite article or cardinality marker, is one of the main unresolved issues in this area of grammar.

### 4. Definiteness Across Languages

Most languages have no definite or indefinite article, and the obvious question is whether definiteness exists in such languages. Views differ on this, and we consider some of the evidence here.

#### 4.1 Definiteness as Universal

Some linguists take the view that definiteness is to be found in all languages, though it may take different forms. In favour of this view is the fact that demonstratives and personal pronouns, which are arguably inherently definite, occur in some form in all languages. The problem then is to explain the absence in many languages of definite noun phrases corresponding to those with *the* in English. A partial answer might be that some languages lacking an article have been observed to compensate by making wider use of a demonstrative, in noun phrases where English would be more likely to have *the*.

It is also to be noted that many languages make use of other grammatical means than an article to express something resembling definiteness. Turkish, Persian and numerous other languages have 'definite direct object' marking. That is, there is some special marking of direct objects (an accusative case morpheme in Turkish, a preposition- or postposition-like object particle in other languages) which is only used when

the direct object noun phrase is to be understood as definite. Another such phenomenon is 'definite agreement', in which verbs show agreement with noun phrases associated with them, as subject or object for example, but only when these noun phrases are definite. Phenomena like these are widespread, and are found in languages that have articles as well as in languages that do not. In the former languages there is not always a perfect match between the noun phrases indicated as definite by the grammatical phenomenon in question and those marked as definite by an article or other definite determiner. This may suggest that what is indicated by definite direct object marking, etc. is not in fact definiteness, but some kind of referential prominence; see Lyons (1999) for detailed discussion.

Phenomena like definite direct object marking, including the case system of Finnish, for example, in which definite objects tend to take accusative case marking and some indefinites take partitive case, have led some linguists to argue for a special relationship between definiteness and case. The idea is that both are superficial manifestations of the same underlying category, and, as evidence for this, it is pointed out that many languages have developed a definite article only after loss or serious weakening of a rich case system. This underlying category is then claimed by some to be relevant for all languages, but appearing in different surface guises.

#### 4.2 Definiteness as Non-universal

The opposing view is that definiteness only occurs in those languages in which it is directly marked, typically by a definite article. On this view, it is necessary to suppose that demonstratives and personal pronouns need not be definite, at least grammatically. The claim that definiteness is not present in all languages can probably only be maintained for grammatical definiteness, since the evidence of definiteness effects suggests strongly that semantic or pragmatic definiteness as discussed above is relevant for languages with no formal definiteness marking.

A variant of this view, discussed in Lyons (1999), is that, as well as some languages having no grammatical definiteness, many have it only in their pronoun system. This is because in certain languages, including Latin and Russian, personal pronouns, whether overt or null (silent), are without doubt definite, though there is no article. This means that a choice between definite and indefinite has to be made in pronouns, while in non-pronominal noun phrases there is no necessary distinction corresponding to that between *the house* and *a house*. The suggestion is, then, that languages fall into three types. The first, including Japanese for example, consists of languages with no grammatical definiteness. The second consists of languages like Latin, with definiteness only in the personal pronoun system. And the third consists of

languages like English with definiteness available in all noun phrase types.

#### 5. Definiteness and Other Categories

Assuming definiteness is a grammatical category, it is one of several pertaining to the noun phrase; others are number, person, gender, and case. In many languages these categories are expressed, as a result of agreement processes, on various modifying words within the noun phrase, and indeed outside the noun phrase on the verb. Definiteness too can be an agreement feature, though it is involved in agreement less commonly than these other nominal categories. Attempts have been made to establish a special relationship between definiteness and some other category. It was noted above that some writers have recently argued that definiteness and case are closely related, and perhaps even the same at a deeper level. It has also been argued that definiteness is closely related to person (Lyons 1999).

The main reason for this claim is the observation that grammatical person seems never to be expressed in indefinite noun phrases. The obvious kind of noun phrase in which person is expressed is that of personal pronouns, and another is phrases of the type *we linguists*. Both these types of noun phrase are inherently definite. The claim is that definiteness and person are the same category. Simple definite noun phrases like *the house* are, like such pronouns as *he* and *it*, third person, which is the unmarked or basic value of the category. First- and second-person forms represent more elaborately specified values.

Claims such as these invite further investigation, and it is at present uncertain whether definiteness is a manifestation of some larger category or a separate category by itself. Indeed, as noted at the beginning, definiteness is not regarded by all investigators as a grammatical category on a par with number etc at all. But there seems to be little strong reason for not taking it to be such a category.

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## Deixis

S. Levinson

The term 'deixis,' from the Greek word for pointing, refers to a particular way in which the interpretation of certain linguistic expressions ('deictics' or 'indexicals') is dependent on the context in which they are produced or interpreted. For example, *I* refers to the person currently speaking, *you* to the intended recipients or addressees, *now* to the time of speaking, *here* to the place of speaking, *this finger* to the currently indicated finger, and so on. These deictic expressions introduce a fundamental relativity of interpretation: uttering *I am here now* will express quite different propositions on each occasion of use. This relativity makes clear the importance of the distinction between sentence-meaning and utterance-meaning or interpretation: in large part because of deixis, one cannot talk about sentences expressing propositions—only the use of an affirmative sentence in a context expresses a determinate proposition. For this reason, some philosophers (e.g., Montague 1974) equate the semantics vs. pragmatics distinction with, respectively, the description of (artificial) languages without indexicals vs. (natural) languages with them, but the distinction then serves no linguistic purpose as all natural languages would then be 'pragmatic' (see Levinson 1983: ch. 2).

The contextual dependency introduced by deixis is quite pervasive; for example, it inheres in tense, and nearly every English sentence is tensed, so that *The capital of the USSR was Moscow* makes a claim only of a time prior to the time of speaking. Yet such relativity of interpretation seems to inhere only in certain expressions, not for example in proper names like *The Parthenon* or descriptive phrases like *the tallest building in the world*. Most semantic theories have been primarily fashioned to handle the latter kind of expression, and it is controversial whether such theories can simply be extended (as opposed to fundamentally recast) to handle deixis adequately.

The phenomenon of deixis has been of considerable interest to philosophers, linguists, and psychologists. It raises a great number of puzzles about the proper way to think about the semantics of natural languages, and about the relation of semantics and pragmatics. It also reminds us that natural languages have evolved for primary use in face-to-face interaction, and are designed in important ways to exploit that circumstance. As people take turns talking, the referents of *I*, *you*, *here*, *there*, *this*, *that*, etc. systematically switch too; children find this quite hard to learn (Wales 1986), but the penalties of such a system far outweigh the advantages of, e.g., substituting unique proper names (if indeed such a system could even in principle operate in a full language, see Lyons 1977: 639ff).

### 1. Philosophical Puzzles

Philosophers often call deictic expressions 'indexicals,' and the corresponding contextual dependency of interpretation 'indexicality.' C. S. Peirce, who introduced these terms, considered indexicals to form a special class of signs characterized by an existential relation between sign and referent; however, his notion was broader than that commonly found today in analytic philosophy or linguistics (but see, e.g., Hanks 1990).

The phenomenon raises a number of fundamental philosophical puzzles about the nature of meaning in natural language (see Yourgrau 1990). On the face of it, a central 'design feature' of language is its context-independence: the truth of *The atomic weight of gold is 196.967* does not depend on who says it where and when (otherwise science could hardly progress). It is the constancy of lexical meanings, together with invariant rules of sentential composition, that are normally taken to be the principles that allow us to generate unlimited sentences and yet still understand the associated meanings. Hence in formal semantics, it is normally held that the 'intensions' (or senses) of expressions determine the corresponding 'extensions' (or referents) in every 'possible world' (any set of circumstances). The phenomenon of deixis shows that this is, at best, an oversimplification: the extension of deictic expressions depends not only on the described circumstances (if any), but also on who says them, to whom, where, and when.

One influential modern treatment (due to Montague 1968) is to let the intension of an expression only determine the extensions relative to a set of contextual indices (e.g., speaker, addressee, time, and place of utterance). Another rather more interesting approach (due to Kaplan 1989) is to distinguish between two aspects of meaning: one aspect, the 'character,' concerns how the context determines the content or intensions, the other, the 'content,' concerns how intensions determine extensions in different circumstances (or possible worlds). On this account, nondeictic expressions have invariant, vacuous character and invariant intensions, picking out variable extensions in varying circumstances (or different possible worlds). But deictic expressions have potentially variable character, and vacuous or variable content, picking out different extensions in different contexts. (Kaplan 1989 himself holds that indexicals are directly referential and have no intension, but contribute to the intensions of the containing expressions; but others have found fruitful the idea that the character of indexicals determines variable intensions.)

Kaplan's scheme raises the query: to what extent



are deictic expressions really exceptional, and to what extent is *character* quite generally determinative of meaning throughout natural language lexicons? The suspicion that much of the vocabulary may really be quasi-indexical is raised, first, by noticing that there are many kinds of deictics easily overlooked, like *ago* or *local*. Second, many expressions have a wide latitude of interpretation like *near* which specifies very different kinds of proximity in the phrases *near the kidneys* vs. *near the North Pole*, given an understanding of the likely contexts of use. Just as *today* is a word containing a deictic parameter (it might be glossed as that diurnal span including the time of speaking), so perhaps *near* contains a parameter fixed contextually. Third, even expressions that look least like indexicals in fact require contextual information for interpretation: thus definite descriptions presuppose a circumscribed domain in which they pick out unique referents (*the white dog* will not do in a situation with more than one), and quantifiers presuppose a domain of discourse (*All the boys ran away* quantifies over a contextually given set of boys). These suspicions have given rise to various fundamental reorganizations of formal semantics, notably Situation Semantics (Barwise and Perry 1983) designed to capture what is taken to be the partially deictic character of most linguistic expressions.

Another philosophical puzzle is posed by deictic expressions. There is a quite widely entertained idea that there is, as it were, a 'language of thought' (to use the phrase popularized by Fodor), structurally close to, or even identical with, the semantical system in which propositional content is represented. How can the content of indexical expressions be represented (e.g., for memory and recall) in such a language, which must itself be nonindexical? It is tempting to think that all one would need is the content, the extensions determined by the context and circumstances. But if I am lost, I can say or think *I'll never find my way out of here* without knowing where *here* refers to, and replacing *here* with, e.g., *Sherwood forest* may not be recognizable as my thought. It would seem that indexical or deictic expressions cannot easily be reduced by translation into a nonindexical language.

There are further puzzles. For example, 'demonstratives' like *this* and *that* which sometimes only succeed in referring by virtue of an accompanying gesture, seem a fundamental, primitive kind of referring expression, and are sometimes held (e.g., by Lyons 1975) to be the ontogenetic origin of referring in general. But as Wittgenstein, Quine, and others have pointed out, pointing itself depends on prior understandings: otherwise, how does the recipient know when I point at a flying bird whether I am referring to a particular part, the colour, or the event? The success of pointing would seem to rely on complex assumptions about mutual salience and

identification, and on examination ostension is anything but self-explanatory.

## 2. Frameworks for the Linguistic Description of Deixis

Linguists normally think of deixis as organized around a 'deictic center,' constituted by the speaker and his or her location in space and time at the time of speaking. This is an oversimplification because the identity and location of the addressee are also normally presumed, forming a two-centered system. A further normal assumption is that where linguistic expressions exhibit both deictic and nondeictic uses, the deictic ones are basic, and the nondeictic ones derived (or transposed, as Bühler put it). Thus *here* and *now* normally refer to the place and time of speaking, but in *What should he do here now, Harry wondered?*, the deictic center has been shifted or transposed from the writer to the protagonist, *Harry*.

Further distinctions between kinds of usage of deictic expressions are necessary (Fillmore 1975). A fundamental distinction is between gestural and non-gestural usages: *this finger* requires a demonstration indicating which finger is being referred to, *this afternoon* requires no such gestural demonstration. Many expressions that would normally be used nongesturally, like *you* or *we*, may be used gesturally to pick out a subset of possible referents (*you, not you, or we but not you*). Other expressions, like *here*, are used equally either way (*We like it here in Holland* vs. *Place the chairs here and here*). Yet other expressions that would not normally be deictic in character (e.g., *the man wearing the hat* or *him* in *Look at him!*) can be converted into deictics, as it were, by gestural specification. Many languages have deictic elements that (in their deictic uses) may only be used gesturally, e.g., presentatives like French *voici*, or the English demonstrative pronoun *that* as in *Who is that?* Where gestural specification is required, it raises very interesting problems for semantic theory (Kaplan 1989). When deictic expressions are used nondeictically, one needs to distinguish anaphoric usages (*We saw Macbeth. We enjoyed that.*) from nonanaphoric ones (*Over the weekend, I just did this and that.*).

It then becomes an empirical matter to try to establish the kinds of contextual parameter that are encoded in deictic linguistic expressions in the languages of the world. A number of surveys are available (see Anderson and Keenan 1985; Fillmore 1975; Levinson 1983: ch. 3; Weissenborn and Klein 1982), and the following sections, organized around the primary deictic parameters, summarize some of this work.

### 2.1 Person Deixis

The traditional grammatical category of person, as reflected, e.g., in pronouns and verb agreements, involves the most basic deictic notions. First person, for example, encodes the participation of the speaker,

## Deixis

and temporal and spatial deixis are organized primarily around the location of the speaker at the time of speaking. The traditional paradigm of first, second, and third persons is captured by the two semantic features of speaker inclusion (S) and addressee inclusion (A): first person (+S), second person (+A), and third person (-S, -A), which is therefore a residual, nondeictic category. As far as is known all languages have first and second person pronouns (though sometimes, as in Japanese, these may derive from third person titles), but not all have third person pronouns. The traditional notion of 'plural' (likewise 'dual' and so on) as applied to the person system nearly always needs reanalysis (e.g., *We* does not mean more than one speaker); in some pronominal systems 'plural' can be neatly analyzed as augmenting a minimal deictic specification with 'plus one or more additional individuals' (AUG). Thus the distinction between *I* and *We* might be analyzed as (+S, -AUG), (+S, +AUG). Many languages distinguish 'inclusive we' from 'exclusive we,' i.e., (+S, +A) from (+S, -A, +AUG).

More sustained analysis will show that it is necessary to distinguish between various finer-grained kinds of participation in the speech event: e.g., to 'decompose' the role of speaker into source of the message vs. transmitter, and addressee into recipient vs. overhearer, and so on, simply in order to describe grammatical distinctions in various languages (see Levinson 1988).

Many other features are often encoded in person systems, whether in pronominal paradigms or predicate agreements, including gender (e.g., masculine, feminine, neuter, or further classes) and honorific distinctions (which are intrinsically deictic on a separate deictic parameter, see below). In languages with predicate agreement, most sentences will obligatorily carry person deictic specification, ensuring the prominence of this deictic parameter.

### 2.2 Time Deixis

As mentioned, the deictic center is normally taken to be the speaker's location at the time of the utterance. Hence *now* means some span of time including the moment of utterance, *tomorrow* means that diurnal span succeeding the diurnal (or nocturnal) span including the time of utterance, and one reckons *ten years ago* by counting backwards from the year including the speaking time. In written or recorded uses of language, one may need to distinguish 'coding time' from 'receiving time,' and in particular languages there are often conventions about whether one writes *I am writing this today so you will receive it tomorrow* or something more like *I have written this yesterday so that you receive it today*.

Most languages exhibit a complex interaction between systems of time measurement, e.g., calendrical units, and deictic anchorage through, e.g., demonstratives. In English, units of time measurement may

either be fixed by reference to the calendar, or not: thus *I'll do it this week* is ambiguous between guaranteeing achievement within seven days from utterance time, or within the calendar unit beginning on Sunday (or Monday) including utterance time. *This year* means the calendar year including the time of utterance (or in some circumstances the 365 day unit beginning at the time of utterance), but *this November* means the next monthly unit so named (usually, the November of this year), while *this morning* refers to the first half of the diurnal unit including coding time, even if that is in the afternoon (see Fillmore 1975).

But the most pervasive aspect of temporal deixis is 'tense.' The grammatical categories called tenses usually encode a mixture of deictic time distinctions and aspectual distinctions, often hard to distinguish. Analysts tend to set up a series of pure temporal distinctions that roughly correspond to the temporal aspects of natural language tenses, and then note discrepancies. For example, one might gloss the English present tense as specifying that the state or event holds or is occurring during a temporal span including utterance-time; the past as specifying that the relevant span held before utterance-time; the future as specifying that the relevant span succeeds utterance-time; the pluperfect as specifying that the past tense relation held at a point in time preceding utterance-time; and so on. Obviously, such a system fails to capture much English usage (*The summit meeting is tomorrow; I have hereby warned you; John will be eating right now, etc.*), but equally it is clear that there is a deictic temporal element in most of the grammatical distinctions linguists call tenses.

Although tense is an obligatory deictic category for nearly all sentences in English and many other languages, firmly anchoring interpretation to context, it is as well to remember that there are many languages (like Chinese or Malay) that have no tenses.

### 2.3 Space Deixis

Deictic adverbs like *here* and *there* are perhaps the most direct examples of spatial deixis. As a first approximation, *here* denotes a region including the speaker, *there* a distal region more remote from the speaker. This suggests a distinction between proximal and distal regions concentric around the speaker, and indeed as a first approximation the demonstrative pronouns *this* and *that* contrast in the same way. Many languages seem to make a similar three-way distinction (*here, there, yonder*) or even, allegedly in the case of Malagasy adverbs, a seven-way distinction. But caution is in order, as the distal categories are often in fact organized around the addressee or other participants, as in Latin *hic* 'close to speaker,' *iste* 'close to addressee,' *ille* 'remote from both speaker and addressee' (see Anderson and Keenan 1985). Further, careful analysis of actual examples of use shows a much more complex pattern, where, e.g.,

proximal and distal deictics may be used to refer to things at an equal physical but different social distance (Hanks 1990).

Demonstratives often occur in large paradigms, with distinctions of relative distance from speaker or proximity to addressee crosscut by other deictic distinctions, for example visibility to participants. It is tempting, but incorrect, to assimilate the visibility dimension to spatial deixis: many languages (e.g., North West Coast Native American ones) show a systematic sensitivity to mode of apprehension of referents, and some require obligatory marking of noun phrases for this dimension. Further spatial distinctions found in demonstrative systems (in, for example, some Austronesian and Australian languages) include 'upriver/downriver from speaker,' 'above/below speaker,' 'north/south/east/west from speaker,' and so on. Such dimensions import absolute, fixed angles into spatial deixis, contrasting greatly with more familiar systems of relative spatial organization. Finally, it should be noted that there are close diachronic and semantic links between demonstratives and definite articles: some analysts (e.g., Lyons 1977) suggest that English *the*, for example, is simply a demonstrative determiner contrasting with *this* and *that* by being unmarked on the proximal/distal dimension, thereby suggesting a fundamental link between the concept of definiteness and deixis.

Spatial deixis is also frequently encoded in verbal roots or affixes, with a typical basic distinction between 'motion towards speaker' (cf. English *come* in some uses) and 'motion away from speaker' (cf. English *go*). Some languages, like the Mayan ones, have a set of a dozen or so motion verbs, encoding distinctions like 'arrive here' vs. 'arrive there.' Sometimes, the basic distinction is between 'motion towards speaker' vs. 'motion towards addressee' (rather than 'motion away from speaker'), or 'motion towards vs. away from speaker's home base.' English *come* in fact exhibits a complex set of such conditions, as shown by examples like *I'm coming to you* vs. *Come home with me*. Parallel notions are often encoded in adverbial or question particles like (archaic) English *hither*, *thither*, *whence?*, *whither?*

Just as the interpretation of *this year* rests on a complex interaction between calendrical units and deictic anchorage, so the interpretation of *on this side of the table* relies on a complex interaction between deixis and nondeictic spatial descriptions, wherein sides, fronts, backs, insides, etc. are assigned to objects. As frequently noted, *The cat is in front of the truck* is ambiguous between the cat being at the intrinsic front of the truck (as determined by direction of canonical motion), and the cat being between the truck and the speaker. *The cat is in front of the tree* can only have the latter kind of interpretation, because trees are not assigned intrinsic facets in English (as reportedly they are in some cultures). This kind of

interpretation is curious because there is no overt deictic element: the tree is assigned a front as if it were an interlocutor facing the speaker. In Hausa, a sentence glossing 'The cat is in front of the tree' would be interpreted to mean the cat is behind the tree, as if the tree was an interlocutor facing away from the speaker. Similarly, English *The cat is to the left of the tree* is taken to have implicit deictic specification (left in the speaker's visual field). These examples point to the fundamentally deictic nature of spatial organization in many languages (but not all: some languages, for example, some Australian ones, have no relative spatial notions like 'left of' 'right of,' employing absolute, cardinal point-like, notions instead).

#### 2.4 Discourse Deixis

In a spoken or written discourse, there is frequently occasion to refer to earlier or forthcoming segments of the discourse (as in *in the previous/next paragraph*, or *Have you heard this joke?*). Since a discourse unfolds in time deixis natural to use temporal deictic terms (like *next*) to indicate the relation of the referred-to segment to the temporal location of the present utterance in the discourse. But spatial terms are also often employed, as in *in this chapter*.

Reference to parts of a discourse which can only be interpreted by knowing where the current coding or receiving point is, are clearly deictic in character. Less clear is the status of anaphora in general, wherein extratextual entities are referred to, but often through a device (as in the legal use of *the afore-mentioned party*) which likewise relies on knowing where one is in a discourse. Analysts tend to make a practical distinction between anaphora (taken to be non-deictic) and textual deixis, while noting that the phenomena grade into one another, and in any case that anaphora is ultimately perhaps deictic in nature (Lyons 1977). Anaphora is fundamental to much syntactic structure, and once again deixis can be shown to be connected to the heart of linguistic organization (see *Anaphora*).

#### 2.5 Social Deixis

Honorifics (see *Honorifics*) are frequently encountered in the languages of the world, drawing on recurrent metaphors of plurality, height, distance, and so on (see Brown and Levinson 1987 for references). They are often thought of as an aspect of person deixis, but although organized around the deictic center like space and time deixis, honorifics involve a separate dimension of social deixis. Honorifics encode the speaker's social relationship to another party, frequently but not always the addressee, on a dimension of rank. There are two main kinds: referent honorifics, where the honored party is referred to, and nonreferent addressee honorifics, where respect is signaled without referring to the addressee. The familiar pronouns of respect, like French *vous* to a

## Determiners

singular addressee, are referent honorifics (which happen to refer to the addressee). But in Korean, Japanese, Javanese, and many other languages it is also possible to describe any situation (e.g., the meal is ready) and signal a particular degree of respect to the addressee by a choice between alternate lexical and grammatical items. In such languages it is difficult to say almost anything without encoding the relative status of speaker to addressee, and no treatment of the lexicon is complete without such specifications. The so-called 'speech levels' of the southeast Asian languages are usually customary collocations of both referent and addressee honorifics, forming locally recognized degrees of politeness (see, for example, Errington 1988 on Javanese).

There are other aspects of social deixis, for example, similar linguistic devices may be used to encode specific kinship relations, as in some Australian languages, rather than disparities in social rank. Perhaps all languages have distinguishable formality levels or genres that serve in a Peircean sense to index the social gravity of the context of utterance; but some languages have discrete, grammaticalized levels of this kind, for example the diglossic levels of Tamil encoded especially in distinct morphology.

There are many sociological aspects of other deictic dimensions, e.g., whether to describe some space as 'here' vs. 'there' may depend on whether one thinks of it as near 'us' or near 'them,' this being sociologically defined (for an exemplary study, see Hanks 1990).

### 3. Conclusions

Some languages require all (or nearly all) sentences to be tensed; others require all noun phrases to be marked with spatially deictic information; and others require a specification of honorific level. As a result, most sentences in most natural languages are deictically anchored, that is, they contain linguistic expressions with inbuilt contextual parameters whose interpretation is relative to the context of utterance.

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## Determiners

J. van Eijck

Syntactically, determiners are operators that combine with nouns to form noun phrases. Semantically, determiners are functions that combine with noun denotations to form noun phrase denotations. Since noun phrase denotations can be viewed as

sets of verb phrase denotations (namely, the denotations of those verb phrases that combine with the noun phrase to form a true sentence), determiner denotations can also be viewed as relations between noun denotations and verb phrase denotations. A



determiner denotation relates noun denotations to the denotations of those verb phrases for which the sentence Det N VP is true.

This article first lists some general properties of determiner denotations. Next, a semantic account is given of the distinction between definite, indefinite, and quantifier determiners. Subsequently, attention is paid to the internal structure of determiners and some special cases are discussed. The article ends with a sketch of a dynamic view on noun phrase and determiner interpretation, where unbounded anaphoric links are handled by interpreting the antecedent noun phrases as 'state changers.'

## 1. Determiners as Relations

In the simplest possible setup, disregarding the singular-plural distinction and focusing on determiners combining with simple count nouns, determiner denotations are functions from sets of individuals (N denotations) to sets of sets of individuals (NP denotations), or, equivalently, determiner denotations are relations between sets of individuals (N denotations) and sets of individuals (VP denotations). Some examples will clarify this:

[<sub>NP</sub> [DET the] [<sub>N</sub> men]] (1)

[<sub>NP</sub> [DET a] [<sub>N</sub> woman]] (2)

[<sub>NP</sub> [DET at least three] [<sub>N</sub> children]] (3)

To facilitate talking about the denotations of the above example phrases, it is convenient to take a model firmly in mind and to use set-theoretic notation to talk about entities in that model: **men** is the set of men in the model, **women** the set of women, **children**  $\cap A$  the number of elements of the intersection of the set of children and the set  $A$ , i.e., the number of entities that are both children and members of  $A$ . Using  $E$  for the universe of discourse,

(1) is interpreted as  $\{A \subseteq E \mid \text{men} \subseteq A\}$  in case **men** has at least two members, it is undefined otherwise.

(2) is interpreted as  $\{A \subseteq E \mid \text{women} \cap A \neq \emptyset\}$ .

(3) is interpreted as  $\{A \subseteq E \mid \text{children} \cap A \geq 3\}$ .

Now, if for convenience one disregards the contextual factors that specify an appropriate subdomain for interpreting the definite description, it can be said that *The men walked* is true in the model if and only if (a) **men**, the set of men in the model, has at least two elements, and (b) the set of walkers is in  $\{A \subseteq E \mid \text{men} \subseteq A\}$ . Similarly, *At least three children played* is true if and only if the set of players is a member of  $\{A \subseteq E \mid \text{children} \cap A \geq 3\}$ .

If one views this uniform treatment of the semantics of subject-predicate combinations from a slightly different angle, determiner denotations are two-place relations  $D$  between sets of individuals. Instead of  $B \in D A$  one now writes  $D A B$ . *The men walked* is true in a given model if and only if (a) there are more than

two men in the model, and (b) the relation of inclusion holds between *men* and *walked*. Thus, the determiner *the* is interpreted as the inclusion relation (modulo a uniqueness requirement for singular *the* and a semantic plurality requirement for plural *the*).

Abstracting from the domain of discourse, it can be said that determiner denotations pick out binary relations on sets of individuals, on arbitrary universes  $E$ . Notation:  $D_E A B$ . See Fig. 1:

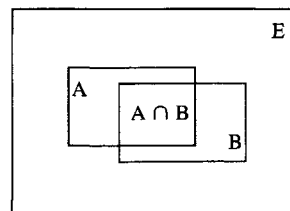


Figure 1. Determiners as binary relations.

## 2. Global Conditions on Determiner Relations

Determiner relations satisfy certain requirements which depend on the semantic nature of the determiner. It is common to distinguish 'definite,' 'indefinite,' and 'quantifier' determiners. The boundary lines between these kinds can be drawn by semantic means, but first mention must be made of two semantic requirements that almost all determiners meet. A first requirement is 'extension':

**EXT** For all  $A, B \subseteq E \subseteq E'$ :  $D_E A B \leftrightarrow D_{E'} A B$ .

A relation observing **EXT** is stable under growth of the universe. So, given sets  $A$  and  $B$ , only the objects in the minimal universe  $A \cup B$  matter. See Fig. 2:

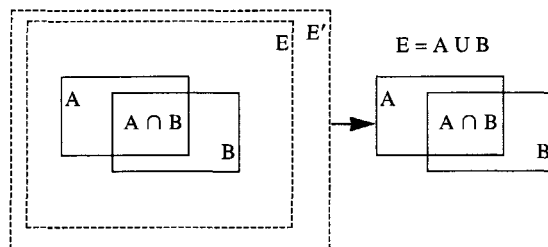


Figure 2. The effect of EXT.

Not all natural language determiners do satisfy **EXT**. An example of a determiner that does not is *many* in the sense of 'relatively many.'

A second requirement for determiners is 'conservativity':

**CONS** For all  $A, B \subseteq E$ :  $D_E A B \leftrightarrow D_E A (A \cap B)$ .

This property expresses that the first argument of a determiner relation (the interpretation of the noun) plays a crucial role: it sets the stage, in the sense that everything outside the extension of the first argument is irrelevant.

## Determiners

It is not difficult to think of noun phrase determiners that do not satisfy **CONS**. One example is *only* in example (4):

Only men came to the party. (4)

This example is true in a situation where all partygoers were men. Starting out from a situation like this, and adding some women to the partygoers will make (4) false. This shows nonconservativity. All is still well if it can be argued that noun phrases starting with *only*, *mostly*, or *mainly* (two other sources of nonconservativity) are exceptional syntactically, in the sense that these noun phrase prefixes are not really determiners. In the case of *only*, it could be argued that *only men* has structure  $[_{NP} [_{MOD} \text{only}] [_{NP} \text{men}]]$ , with *only* not a determiner but a noun phrase modifier, just as in (5):

Only John came to the party. (5)

However this may be, separating out the determiners satisfying **CONS** and **EXT** is important, for the two conditions taken together ensure that the truth of  $D A B$  depends only on  $A - B$  and  $A \cap B$ . See Fig. 3:

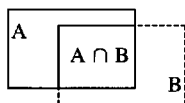


Figure 3. The combined effect of **EXT** and **CONS**.

### 3. Semantic Distinctions

Next, the relational perspective suggests a very natural way of semantically characterizing the three main kinds of determiner relations listed below.

- Quantifier determiners. The determiners in *every child*, *no man*, *at least five donkeys*.
- Definite determiners. The determiners in *the king of France*, *those books*, *John's girlfriend*.
- Indefinite determiners. The determiners in *some woman*, *an unknown God*.

Determiners that are 'quantifiers' satisfy the condition of 'isomorphy.' **ISOM** expresses that only the 'cardinalities' (numbers of elements) of the sets  $A$  and  $B$  matter. If  $D$  satisfies **EXT**, **CONS**, and **ISOM**, the truth of  $DAB$  depends only on the cardinal numbers  $|A - B|$  and  $|A \cap B|$ .

The 'definite' determiners are the determiners forming noun phrase denotations which are 'principal filters' on some universe  $E$ :

A set  $\mathcal{F} \subseteq \mathcal{P}(E)$  is a 'principal filter' on  $E$  if and only if there is a set  $X$  such that  $\mathcal{F} = \{A \subseteq E | X \subseteq A\}$ . Here  $X$  is called the 'generator' of the principal filter  $\mathcal{F}$ .

For example, the genitive determiner *John's* is definite, for if Sally is John's girlfriend (in some suitable domain of discourse  $E$ ) then the noun phrase *John's girlfriend* is interpreted as a set of sets  $\{A \subseteq E | s \in A\}$ , which is the principal filter on  $E$  generated by  $\{s\}$ .

Also, proper names form definite noun phrases, for they are interpreted under the relational regime as the principal filters generated by the referents of the names. On a universe  $E$ , the noun phrase *John* is interpreted as the set  $\{X \subseteq E | j \in X\}$ . In fact, this way of treating names is a slight overcomplication, for one could just as well have said that the proper name *John* is interpreted as an individual  $j$  in the domain under consideration, and *John smiled* is true just in case  $j$  is an element of the set of smiling entities in the domain. The bonus of treating proper names as principal filters is that one gets a uniform semantics for the move of combining noun phrases with verb phrases.

The 'indefinite' determiners, finally, are the determiners forming noun phrase denotations which are unions of principal filters, in the following sense:

A set  $\mathcal{V} \subseteq \mathcal{P}(E)$  is a 'union of principal filters' on  $E$  if and only if  $\mathcal{V} = \bigcup_{i \in I} \mathcal{F}_i$ , where for every  $i \in I$  it holds that  $\mathcal{F}_i$  is a principal filter on  $E$ .

Note that it follows directly from the definition that a principal filter  $\mathcal{F}$  is itself a union of principal filters, namely a union of the singleton set  $\{\mathcal{F}\}$ . Thus, it follows from the semantic definitions of definite and indefinite that there are borderline cases where the interpretation of definites and indefinites coincide.

It is not difficult to see that the determiners *a* and *some* are indefinite, for *a man* is interpreted as the set of all sets containing at least one man, which is a union of the principal filters generated by the singleton sets containing the individual men in the domain. Similarly for *some women*. In the borderline case where there is just one man in the domain the interpretation of *a man* is itself a principal filter.

For a slightly different example, consider the compound determiner *somebody's*. This determiner is indefinite according to the definition given here, for *somebody's girlfriend* is interpreted as the set of all sets containing at least one girl who is somebody's girlfriend, and this is the union of all principal filters generated by the singleton sets of those girls who have boyfriends. Similarly, the complex determiner *John's or Bill's* can be seen to be indefinite.

Note that it follows from the definitions that quantifiers and indefinites overlap as well. The interpretation of *some woman* observes **ISOM**, and therefore it is a quantifier, and it is also a union of principal filters, and therefore it is an indefinite. On the other hand, *no* is an example of a quantifier determiner which is not an indefinite, for the interpretation of *no woman* observes **ISOM** but is not a filter. An example of the converse situation is *John's or Bill's*, which is an indefinite determiner, for the interpretation of *John's or Bill's girlfriend* is the union  $\mathcal{V}$  of all principal filters  $\mathcal{F}$  generated by the singleton sets of the girlfriends of either John or Bill. But the determiner is no quantifier, for  $\mathcal{V}$  does not observe **ISOM**.

Definite and indefinite noun phrase denotations share the property of being ‘monotone increasing’ in the following sense:

MON $\uparrow$  A set  $\mathcal{A} \subseteq \mathcal{P}(E)$  is ‘monotone increasing’ if and only if for all sets  $A \subseteq A' \subseteq E$  it holds that  $A \in \mathcal{A}$  implies  $A' \in \mathcal{A}$ .

#### 4. Internal Structure

The relational perspective makes it easy to interpret Boolean compounds of determiners; see Fig. 4. Also, the treatment of possessives is relatively straightforward. In Fig. 4, **N** is used for the interpretation of the noun *N*, **D** for that of the determiner *Det*, and **NP** for that of the noun phrase *NP*. Also, in the entry for possessives,  $F(Y)$  is everything which has something in *Y* that may count as its ‘possessor.’ The vagueness in the previous sentence is deliberate, for the nature of the possessive relation will generally depend on context.

Operation	Syntax	Interpretation in domain <i>E</i>
Negation	{not <i>D</i> } <i>N</i>	$\{X \subseteq E \mid X \notin \mathbf{D}(\mathbf{N})\}$
Conjunction	[ <i>D</i> <sub>1</sub> and <i>D</i> <sub>2</sub> ] <i>N</i>	$\mathbf{D}_1(\mathbf{N}) \cap \mathbf{D}_2(\mathbf{N})$
Disjunction	[ <i>D</i> <sub>1</sub> or <i>D</i> <sub>2</sub> ] <i>N</i>	$\mathbf{D}_1(\mathbf{N}) \cup \mathbf{D}_2(\mathbf{N})$
Possessive	[ <i>NP</i> ’s] <i>N</i>	$\{X \subseteq E \mid \exists Y: Y \in \mathbf{NP} \ \& \ F(Y) \cap \mathbf{N} \subseteq X\}$
Adj restriction	[ <i>D</i> <i>Adj</i> ] <i>N</i>	$\{X \subseteq E \mid X \cap \mathbf{Adj} \in \mathbf{D}(\mathbf{N})\}$

Figure 4. Structure and interpretation of determiners.

One might also want to count adjectival restrictions as part of the determiner, giving *those blue-eyed girls* the structure (6):

[**NP** [**DET** *those blue-eyed*] [**N** *girls*]]. (6)

The semantics of adjectival restrictions are given in the final row of Fig. 4. Observe that this treatment only works for intersective adjectives such as *blond*, *blue-eyed*, *long-haired*, etc. Nonintersective adjectives such as *small* are in need of more subtle treatment (see *Adjectives*), while intensional adjectives like *alleged*, *fake*, *would-be*, etc., call for a major shift of perspective.

There may be a good syntactic case for grouping ordinary adjectives with nouns to form complex nouns instead of with determiners to form complex determiners, but the above shows that there are no semantic objections to the complex determiner option. For noun phrases containing superlative adjectives, on the other hand, there seems to be strong semantic evidence for considering the superlative as part of the determiner. Under the current regime, *the nicest girl* is interpreted as the principal filter generated by the singleton set containing the person *g* who happens to be the nicest girl in the given context. This suggests taking *the Adj-est* as a complex determiner, to be interpreted as the function mapping any property **P** to the set  $\{X \mid p \in X\}$ , where *p*  $\in$  **P** is the individual satisfying *Adj* to the highest degree. The semantic specification assumes that ‘grades of fulfilment,’ say

on a continuous scale from 0 to 1, are available for all gradable adjectives.

To illustrate that semantics provides more leeway than may appear at first sight, here is a sketch of a different approach. The semantic effect of the superlative morphology on a gradable adjective *Adj* (for convenience attention is restricted to intersective adjectives) is to change a function *Adj* mapping properties **P** to properties **P**  $\cap$  *Adj* into a function *Adj-est* mapping properties **P** to properties with an associated *Adj* ordering, in other words to pairs of the form given in (7):

$$\langle \mathbf{P} \cap \mathbf{Adj}, \leq_{\mathbf{Adj}} \rangle. \quad (7)$$

The definite determiner *the* is now interpreted as an expression constructing principal filters out of such pairs; the *Adj* ordering serves as the context providing the definiteness required. This account has a natural extension to complex determiners such as *the five*, as in *the five nicest girls*. The noun phrase gets interpreted as the principal filter generated by the set of girls occupying the first five places in the  $\leq_{\text{nice}}$  ordering.

#### 5. Determiners and Mass Nouns

In the above, attention was limited to determiners combining with count nouns to form noun phrases interpreted in a domain of run-of-the-mill individual entities. Extension to the case of determiners for noncount nouns is relatively straightforward: the interpretation of noncount nouns calls for a domain containing quantities of continuous stuff, with a ‘part of’ relation  $\sqsubseteq$ . The formulations of **EXT**, **CONS**, and **ISOM** now need patching to take the switch from  $\subseteq$  to  $\sqsubseteq$  into account; these details are left to the reader.

*Some wine* is interpreted as the set of all quantities of stuff having some wine in it (to express this formally one needs the  $\sqsubseteq$  relation), *little milk* as the set of all quantities of stuff not containing more than a certain small amount of milk, etc. Note that in these cases the denotations of the determiners remain basically the same (see *Mass Expressions* for further details).

#### 6. Determiners Involving Measure Phrases

Both count nouns and mass nouns can be preceded by complex determiner expressions involving measurement to form measured noun phrases.

I bought two pounds of apples/cheese. (8)

Basically, *Numeral F of*; where *F* is a measure function word such as kilograms, inches, years, is a complex determiner which is interpreted as a function mapping properties **P** (e.g., sets of apples) or quantities of stuff **S** (e.g., amounts of cheese) to (a characteristic function of) a set of sets (9) or a set of amounts (10).

$$\{X \mid F(X \cap \mathbf{P}) = n\}. \quad (9)$$

## Determiners

$$\{X|F(X \sqcap S) = n\}. \quad (10)$$

Here  $F$  is the function which interprets the measure expression, and it is assumed that  $F$  measures along the right dimension for the sets of individuals or amounts of stuff under consideration (cheese is measured in grams, pounds, or kilograms, fabric in centimeters, inches, or yards, detention in months, or under harsher regimes in years, and so on).  $\sqcap$  is the intersection operation for amounts of stuff. This operation can be defined in terms of  $\sqsubseteq$ , but the formal details will not be given. In fact, to make the whole setup work smoothly in a uniform framework,  $\sqsubseteq$  and  $\sqcap$  need to be subsumed under one relation, but the details are outside the scope of the current article.

Observe that the determiner *two pounds of* is indefinite, for the noun phrases that it forms are interpreted as unions of principal filters (modulo the obvious patch to the definition to replace ‘adding individuals’ by ‘adding stuff’). A similar patch to the definition of **ISOM** shows that it is also a quantifier determiner. *Less than two inches of*, on the other hand, is a quantifier determiner but not an indefinite determiner. *These three liters of*, finally, is a definite determiner.

### 7. Generic Uses of Determiners

The English indefinite determiner  $a(n)$  has a special generic use, exemplified in (11), which has not been covered yet:

What this country needs is a good 5-cent cigar. (11)

It seems clear that whatever semantic treatment of generics one chooses, the same mechanism should be brought to bear on generic uses of the bare plural:

Good 5-cent cigars are hard to come by these days. (12)

One way of handling generics is to consider generic indefinites and generic bare plurals as ‘names’ of members of a special class of generic entities. The assumption is that there is some entity  $c$  which is the generic good 5-cent cigar, and *a good 5-cent cigar* and *good 5-cent cigars* (in their uses) simply refer to that entity.

This seems straightforward enough, but there are some logical complications. If good 5-cent cigars form a natural class, what about bad 5-cent cigars? Or cigars costing less than 5 cents? These might form natural classes also, but note that if every subset of a given domain of regular individuals has a corresponding natural class with an associated generic individual, then there will be more generic individuals than regular individuals.

Next, how do generic individuals relate to regular individuals? First observe that they can share certain properties with regular individuals. Properties that the generic good 5-cent cigar must certainly have: costing only 5 cents, being good (according to the generic cigar smoker’s standard, say), being approved of by at least one President of the USA (example (11)

is a presidential quote), and so on. But there are also properties that no generic individual can have. To mention an example, the generic good 5-cent cigar does not share the property of regular good 5-cent cigars of exemplifying the generic good 5-cent cigar. If the example seems far-fetched, observe that it will not do to disregard the relation of ‘exemplification’ between regular individuals and generic individuals altogether, because natural language allows anaphoric linking between regular and generic uses of noun phrases.

They must sell a good 5-cent cigar in the USA, (13)  
for the president himself is smoking them.

In (13) the pronoun *them* refers to individual cigars, but this pronoun is linked to a generic use of *a good 5-cent cigar* in the same sentence.

It should be clear that the above remarks only scratch the surface of the semantics of generic expressions (see *Genericity* for further information).

### 8. The Dynamics of Noun Phrase Interpretation

If one looks at noun phrase behavior from a dynamic perspective, some noun phrases can be seen to prepare the ground for anaphoric links in a way that other noun phrases do not. In the following examples, the indices serve to indicate intended anaphoric links. Superscripts are used for antecedents, subscripts for anaphors:

Some<sup>*i*</sup> man whistled. He<sub>*i*</sub> was happy. (14)

The<sup>*j*</sup> man whistled. He<sub>*j*</sub> was happy. (15)

No<sup>*k*</sup> man whistled. \*He<sub>*k*</sub> was happy. (16)

Roughly, definite and indefinite noun phrases admit anaphora outside their scopes, other noun phrases (quantified noun phrases which are not also indefinites) do not. This is only an approximation because certain sentential operators—negation is an example—block anaphoric linking. A dynamic perspective borrowed from the semantics of imperative programming languages can account for the varieties of unbounded anaphoric behavior.

The reason for placing the antecedent on the determiners instead of the noun phrases they form is that noun phrases can have internal anaphors, i.e., noun phrases may contain pronouns anaphorically linked to their main determiner, as in (17):

Every<sup>*i*</sup> man who thinks he<sub>*i*</sub> is a genius is conceited. (17)

Dynamic logic views the meaning of program statements as relations between machine states holding before the program statement was executed and machine states holding after the execution of the statement. Applying this perspective to natural language, the meaning of a noun phrase [Det<sup>*i*</sup> N] (a determiner Det with index  $i$  and a noun N, the index being a device for indicating intended anaphoric links with



the noun phrase as antecedent), given an appropriate verb phrase argument VP, is a relation between value assignments to pronouns holding before the processing of  $[\text{Det}^i \text{N}] \text{VP}$  and value assignments to pronouns holding after the processing. The assignments that can hold before the processing of a sentence form the 'input assignment set,' the assignments that can hold afterwards the 'output assignment set'. Meaning is a relation between an input assignment set and an output assignment set.

Processing starts with an assignment set containing just the assignment mapping deictic pronouns to contextually given things, the 'initial input assignment set.' A sentence or sequence of sentences is true if at the end of processing the set of output assignments is not empty.

To focus on an example: the interpretation for the noun phrase *some<sup>i</sup> A* will first take an appropriate second argument *B* and then relate a set of assignments *G* which do not have values for *pro<sub>i</sub>* (the pronoun with index *i*) to a set of assignments *G'*, with every *g'* in *G'* just like some *g* in *G*, except for the fact that *pro<sub>i</sub>* now gets a value. Every member of *G'* maps the pronoun *pro<sub>i</sub>* to an object *d* in  $A \cap B$ . The dynamism here reflects the fact that no pronouns preceding *some<sup>i</sup> A* can be anaphorically linked to the quantifier, while pronouns following the determiner plus its two arguments can be so linked by inter-

preting them as objects in the intersection of the noun interpretation and the verb phrase interpretation.

By contrast, the interpretation for the noun phrase *no<sup>i</sup> A* will relate a set of assignments *G* which do not have values for *pro<sub>i</sub>* to the same set *G*, provided the intersection  $A \cap B$  is empty, where *B* is the interpretation of the second argument of the determiner, and to the empty set of assignments otherwise. This reflects the fact that neither pronouns preceding the noun phrase nor pronouns following it (and outside its scope) can be anaphorically linked to it.

Of course, the above account still leaves many semantic details unspecified; it does not, as it stands, do justice to the anaphoric possibilities inside an antecedent noun phrase and within its scope, and it also ignores the syntactic agreement constraints between noun phrase antecedents and pronouns. Nevertheless, if it has managed to illustrate the dynamic principle it has served its purpose.

*See also:* Genericity; Mass Expressions

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## Evidence and Modality

D. Blakemore

Speakers do not simply communicate facts. They communicate their certainties and their doubts, their guesses and their hypotheses, their desires and their fears. In other words, they communicate various attitudes towards the propositions their utterances express. Writers concerned with 'modality' (see *Mood and Modality: Basic Principles and Further Developments*) in natural languages are particularly concerned with the fact that propositions may be presented as being more or less likely to be true, and with the grammatical means employed by languages for indicating the strength of the speaker's commitment to the proposition he has expressed—for example, mood in Latin and the modal verbs in English.

Intuitively, it is clear that the strength of a speaker's commitment to an assumption depends not only on the amount of evidence he has for its truth, but also on the type of evidence. For example, it seems that assumptions based on clear perceptual evidence tend

to be very strong; the strength of an assumption arrived at by deduction depends on the strength of the assumptions taken as premises; and the strength of an assumption derived from what someone has said is commensurate with one's degree of confidence in the speaker. It is not surprising, then, that many languages have developed grammatical means for indicating the type of evidence the speaker has for what he is saying. The term 'evidential,' however, is generally used (for example, by Palmer 1986) only to describe those devices used to indicate perceptual evidence (both direct and indirect) and those used to mark evidence that is obtained from someone else. Grammatical devices used to indicate that information is derived by deduction are part of a system called 'judgments.' So, for example, whereas in example (1) the German modal verb *sollen* plays an evidential, or, more particularly, hearsay, role, in (2) the English modal *must* plays a judgmental role:

Er soll in die Schweiz gegangen sein. (1)  
Apparently he has gone to Switzerland.  
[from Blass 1990]

His coat isn't here. He must have gone. (2)

But it seems that this distinction is not always straightforward to draw. For example, according to Barnes (1984), Tuyuca, a language spoken in Brazil and Columbia, has a system of five evidentials: visual, nonvisual, apparent, secondhand, and assumed. These are illustrated (in that order) in (3–7):

diigua apé-wi (3)  
He played soccer (I saw him)

diigua apé-ti (4)  
He played soccer (I heard the game and him, but didn't see him)

diigua apé-yi (5)  
He played soccer (I have seen evidence that he played—his distinctive footprint on the pitch)

diigua apé-yigi (6)  
He played soccer (I obtained the information from someone else)

diigua apé-hiyi (7)  
He played soccer (It is reasonable to assume he did)

However, surely both (5) and (7) involve deduction—that is, judgment. Palmer (1986) concludes that one can only say that the modal system of Tuyuca is predominantly evidential, while that of English, for example, is predominantly judgmental.

(Barnes reports that there is no present tense form of the secondhand evidential. She suggests that the explanation for this lies in the fact that tense in visual, nonvisual, and secondhand evidentials indicates when the speaker got his information. If a speaker has been told that an event is taking place, he will not assume that it still is going on: he simply reports what was going on when he got the information.)

Obviously, different languages grammaticalize different distinctions. But one must be careful that in classifying these different systems one does not obscure the relationship between inference and evidence. Information may be deduced from premises which are themselves based on perceptual evidence (as in (2)); it may be deduced from premises which are based on hearsay; or it may be deduced from premises which themselves are derived by inference (deductive or inductive). As previously stated, the strength of a conclusion depends on the strength of its premises: a conclusion will only be as strong as its weakest premise. And clearly, the strength of a premise will depend on the type of evidence that one has for it. Hence Barnes's observation that information marked as apparent is stronger than information marked as assumed.

## 1. Lexical and Nonlinguistic Evidentials

Palmer's study of modality (and hence of evidentials) is restricted to what is 'systematized and organized' within the grammatical systems of languages. For Palmer, a phenomenon is grammatical only to the extent that it is subject to syntactic restrictions. This means that grammaticalization is a matter of degree and that it is not always easy to decide what to include in a grammatical study. Inflectional mood is clearly grammatical according to this criterion. But as Palmer points out, modal verbs, clitics, and particles vary in the extent to which they can be regarded as being subject to syntactic restrictions. Obviously, according to this view, purely lexical phenomena have to be excluded—for example, the evidential role of the underlined expressions in (8):

- (a) Apparently Tom's in town (8)  
(b) Evidently Tom's in town  
(c) I gather that Tom's in town  
(d) They say that Tom's in town

Palmer also excludes intonation and other prosodic features on the grounds that they rarely interact with grammatical systems in a systematic way.

There is, however, a broader conception of grammaticality grounded in the so-called modular view of the human mind, and, in particular, in the distinction between those aspects of meaning that are encoded by the grammar and those which are derived pragmatically through the interaction of pragmatic principles and inference. According to this view, the range of grammatical devices used to indicate the type of evidence the speaker has for what he says must include a whole range of phenomena—syntactic, morphological, lexical, and prosodic. Since a far greater range of propositional attitudes are lexicalized than are marked syntactically this conception allows not only for the study of a wider range of linguistic phenomena, but also a wider range of meanings (cognitive phenomena).

However, this broader conception of grammaticality is not without its problems either. For example, many readers will be familiar with the nonlinguistic quotative device involving the use of the two index fingers to form invisible quotation marks around part of an utterance. It appears that this nonlinguistic device is generally associated with two intonational features, the first in the timing domain—that is, a brief pause before and after the quoted material—and the second in the pitch domain—namely, an upwards resetting of key for the duration of the quoted material. The question is whether or to what extent these prosodic correlates of the nonlinguistic index finger device constitute grammaticalization.

Whatever the answer to this question, it is clear that the relevance of the quotation does not always lie in the fact that the speaker is attributing the words quoted to someone else. More often it lies in the

speaker's attitude to the fact that the person had used those words. As will be seen, this is characteristic of many of the so-called hearsay particles, and it raises the question of how much these particles really have to do with modality.

## 2. Hearsay Particles

Hearsay particles have been reported from a wide variety of languages. For example, they have been found in many Australian languages, in the languages of the Philippines and Nepal, in Tamil in South India, and in the languages of the Americas. Indeed, in some languages—for example, Hixkaryana (Derbyshire 1979) and in a number of Philippine languages the use of a hearsay particle is obligatory whenever the speaker reports information that he has got from someone else.

Intuitively, it is clear that the notion of hearsay is related to that of reported speech. This raises the question of the relationship between hearsay particles and the complementizers that follow speech verbs. This question is addressed by Blass (1990) in her study of the role of *ré* and its phonological variant *rí* in Sissala, a Niger-Congo language. The examples in this discussion of Sissala are all from Blass. For convenience the translation of the main part of the sentence is given, leaving *ré* in its utterance final position. Blass reports that the most frequent use of this expression is as a complementizer introducing direct and indirect speech. In this case it is positioned at the front of the embedded sentence as in (9). However, as shown by (10), *ré* may also occur in utterance final position, in which case, Blass argues, it is not a complementizer but a particle.

His wife left and said *rí* I am going to my lover. (9)

[Background: a report by a *griot* about the slave trade in which he talks about people being tied to the tails of horses and dragged along] (10)

Some died and were disconnected and left there *ré*.  
Some died and were disconnected and left there it is said.

One reason that Blass gives for this analysis of final position *ré* is that *ré* is found in final position in simple sentences, for example, when another utterance is being echoed. Consider, for example, the following extract (11) involving three speakers.

- A: They have done well this year. (11)  
B: They who conducted the seminar at Boura.  
C: They have done really well *ré*.

In example (12) B's utterance does not echo what A actually says but rather what it implies.

- A: They (the ants) gather them (grains) and take them out and leave them there. They enter the house again, break (the grains) again and take them out. (12)  
B: Eh. ants work hard *ré*

In example (12) the speaker echoes what has been said in order to convey his attitude towards what has been expressed. The speaker is endorsing what has been said. Blass points out that a speaker may also echo an utterance in order to dissociate himself from the opinion it expresses. In other words, a speaker may mark his utterance with *ré* when he is being ironic. In view of such cases the issue is whether one says that *ré* is an irony marker in addition to its role as a hearsay particle.

A similar phenomenon is discussed by Itani-Kaufman in her paper on the Japanese particle *tte*. As with the Sissala expression *ré*, *tte* is used either as a complementizer or as a sentence final particle. One might be tempted to analyze the sentence final use illustrated in (13) as a complementizer and say that the utterance is relevant as reported speech—especially since in Japanese speech verbs like *hear* can be omitted.

Kono natsu atsuka naru tte (13)  
this summer hot become PART  
I hear that it will be hot this summer

However, as Itani-Kaufman points out, this analysis does not take into account the fact that in many cases *tte* is used to mark echoic utterances whose relevance lies in the attitude of the speaker to the quoted material. In particular, it is used when the speaker is being ironic. For example, in (14) the speaker is conveying her disgust towards the overstatement in a TV commercial.

Itsumo onaji ne. Donna yogore mo ochiru tte (14)  
They always say the same thing. Any stain will be removed.

Similarly, Slobin and Aksu (1982) mention that the Turkish morpheme *-miş*, (realized as *-miş*, *-miş*, *-miş*, *-müş*, *-muş*) which is analyzed as a hearsay marker, can also be used ironically to cast doubt on a proposition. For example, a speaker who failed to remember the words of a song might produce the utterance in (15).

Bu şarki-nin söz-ler- i- ni ne de iyi (15)  
this song-GEN word-PL POSS ACC how-EMPH good  
bil- iyor-muş-um  
know- PRES 1SG

Clearly, all these examples raise the question of whether there is any relation between reported speech, hearsay, and irony, and thus whether there can be a unitary analysis of these particles. Slobin and Aksu suggest that the ironic use is a 'pragmatic extension' of the normal hearsay function based on the fact that hearsay is unreliable. At the same time, they believe that the example in (15) reveals something more—namely, that what the speaker finds to be true in the real world (the lack of memory for the words of the song) is contrary to her habitual assumption of the state of her knowledge. In other words, her mind was

'not prepared.' Accordingly, they propose that the essence of all uses of *-miş* is to encode situations for which the speaker is not prepared.

It is certainly difficult to see how a purely modal account of hearsay particles (cf. Palmer) could begin to explain the characteristic attitudes conveyed by ironic utterances. However, it is also hard to see how Slobin and Aksu's notion of an unprepared mind helps in capturing the essence of irony (no matter how useful it is in the explanation of other types of phenomena).

### 3. Interpretive Use

Both Blass and Itani-Kaufman have proposed that a unified account of the role of hearsay markers can be given in terms of Sperber and Wilson's (1986) notion of the interpretive use of representations. In truth-conditional semantics it is assumed that the notion of a descriptive representation is sufficient so that a proposition is a representation of the state of affairs it describes or makes true. However, Sperber and Wilson show that there is a whole range of phenomena which call for a different notion of representation—that is, representation by resemblance.

The idea that pictorial representations resemble what they represent is familiar enough. But in fact all sorts of phenomena can be used representationally. For example, you want to know how big a kiwifruit is. I may outline its shape with my fingers or show you another object which I believe has similar proportions. You might communicate your wish for a drink in a noisy cafe by imitating the act of raising a glass to your lips. Obviously, no two phenomena are exactly alike, and a communicator expects his audience to be able to identify the respects in which the resemblance holds. For example, when I draw a map showing you how to get to my house, I do not expect you to walk across a sheet of white paper past signs saying 'cafe' and 'supermarket.'

The possibility that utterances may represent something that they resemble is less familiar. However, it seems that it plays an important part in verbal communication. Consider the example given by Sperber and Wilson (16):

- Peter: And what did the innkeeper say? (16)  
Mary: Je l'ai cherché partout.

Mary does not intend to communicate the proposition that she (Mary) looked for the lost wallet everywhere. Her utterance is not relevant as a description of a state of affairs but rather as a representation of another utterance—an utterance that it resembles. In this case the resemblance is very close: Mary's utterance has the same linguistic form as the innkeeper's. However, an utterance does not have to be a direct quotation in order to represent another utterance. Mary might have answered Peter as in (17) or (18).

- Peter: What did the innkeeper say? (17)  
Mary: I looked for it everywhere.

- Mary: He has looked for your wallet everywhere. (18)

And of course the innkeeper might not have actually said 'Je l'ai cherché partout.' He might have made a long speech which did not even contain this sentence. Nevertheless Mary's reply in (18) might still be regarded as a representation—that is, a summary—of what he said and hence of what he thought. As Sperber and Wilson say, her utterance is an interpretation of the innkeeper's utterance or thoughts.

A speaker who intends that his utterance be understood as an interpretation cannot give a guarantee of the truth or factuality of what he is saying since his utterance does not purport to be a description of a state of affairs. The only guarantee he can give is one of faithfulness. The strength of this guarantee varies from situation to situation: a fully identical representation is not always the most relevant one. Sometimes the speaker may indicate explicitly what level of faithfulness is being attempted, for example, (19):

- He's bringing a chocolate cake. That's precisely (19)  
what he said.

- He's bringing a chocolate cake—or at least that's  
what he gave me to understand.

On other occasions it is left to the hearer to decide just how faithful an interpretation is being offered on the basis of the context and pragmatic principles.

It is not difficult to see how hearsay particles come in here. Inasmuch as they have a reportative function they can be regarded as explicit linguistic indicators of faithfulness. However, according to this analysis, an utterance intended as an interpretation does not have to be a representation of what someone said: it could be an interpretation of someone's opinion or thoughts. For example, free indirect speech, illustrated in the second segment of the sequence in (20), is interpretive in this sense.

- She walked slowly along the path kicking the (20)  
papery gold and brown leaves. Yes, autumn  
was certainly the best season of the year.

If, as Blass and Itani-Kaufman have suggested, hearsay markers are really interpretive use markers, then one ought to find them in examples of free indirect speech as well as in examples which involve verbs of propositional attitude (*think, believe, hope*, etc.). Blass has reported that this is indeed the case for Sissala. As she points out, although one might use the verb *say* in constructions like *it is said that*, one often means *it is generally believed that*. Unfortunately, this use of hearsay particles is not discussed by other authors, and consequently, one cannot say how widespread the phenomenon is. However, a number of authors do report the use of hearsay markers in the indication of irony.



So far it has been assumed that an utterance which is intended as an interpretation is relevant only in virtue of informing the hearer that someone said or thought something. But in reporting someone's thoughts, a speaker may indicate his own attitude towards them. Sperber and Wilson call an utterance that is relevant in this way echoic. As they show, there is a whole range of attitudes that an echoic utterance may convey. In example (12) a speaker echoes another utterance in order to endorse the opinion it expresses. Example (14) illustrates how a speaker may use irony to dissociate himself from the opinion echoed.

The following examples (21–22), given by Sperber and Wilson) not only illustrate this point, but also suggest that the role of *indeed* might be analyzed in terms of an interpretive use marker.

He: It's a lovely day for a picnic (21)  
[They go for a picnic and the sun shines]  
She (happily): It's a lovely day for a picnic indeed.

He: It's a lovely day for a picnic (22)  
[They go for a picnic and it rains]  
She: It's a lovely day for a picnic indeed.

#### 4. Conclusion

It might seem that irony takes one a long way from evidentials. But hearsay particles have been traditionally analyzed as evidentials. The advantage of Sperber

and Wilson's approach is that one can explain why a hearsay particle should be able to play a role in the indication of secondhand evidence and in the indication of irony. Moreover, it seems that their proposal that some utterances come with a guarantee of faithfulness rather than a guarantee of truth may provide an alternative (nonmodal) explanation of the link between the secondhandness of the information marked as hearsay and the intuition that the speaker is not able to vouch for its truth.

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## Factivity

P. A. M. Seuren

Factivity is a semantic property of certain predicates, 'factive predicates,' which take an embedded S-structure, preferably a *that*-clause, as subject or object. The *that*-clause of a factive predicate P is presupposed to be true when P is the main lexical predicate of a main clause (directly under a speech act of assertion, question, wish, command, etc.). Examples of factive predicates with factive object clauses are *know*, *realize*, *have forgotten*. Usually, the so-called affective factives are included, such as *regret*, *deplore*, *be delighted*. (Un)forgivable, pity, regrettable are predicates with factive subject clauses. Thus, *What a pity that she has left* presupposes that she has left. And *He hasn't forgotten that Bob played a trick on him* (with standard minimal, presupposition-preserving *not*) presupposes that Bob played a trick on him.

Sometimes a predicate may take a sentential subject as well as a sentential object clause. Such double complementation predicates are invariably factive with respect to their subject clause (though why this should be so is totally unknown). For example, a sentence like *That the butler had blood on his shirt suggested that he was the murderer* presupposes that the butler had blood on his shirt. Likewise for all verbs that take double complementation.

Factive verbs are intensional in that they block 'Substitution *salva veritate*' of coreferential terms: *Lucas realizes that the Morning Star is uninhabited* does not have the same truth-conditions as *Lucas realizes that the Evening Star is uninhabited*.

Some predicates are 'antifactive,' in that they induce a presupposition of the *falsity* of the embedded

*that*-clause. For example, *be under the illusion* is an antifactive predicate. (Likewise for the German *wähnen*, used by Frege (1892: 47) in the first modern observation of factivity.)

In modern times, factivity was brought to the attention of the linguistic world by the article *Fact* (Kiparsky and Kiparsky 1971). These authors point out that factivity is not only a semantic but also a syntactic property, as factive predicates share a number of syntactic properties, in particular the impossibility of 'subject raising' from the imbedded clause, and the possibility of replacing *that* with *the fact that*. The only exception is the prototypical factive verb

*know*, which seems to behave syntactically as a non-factive verb. This problem can be solved, in principle, by assuming that *know* has lexically incorporated the NP *the fact* as part of its object term, as in 'be aware of the fact that ...'

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## Finiteness

M. Koptjevskaja-Tamm

Schools teach that verbs may be finite and nonfinite. However, what is really meant by these terms? How does one know which verb forms are finite and which are nonfinite? Is the opposition in finiteness universal? It turns out that the answers to these questions are far from being straightforward, especially when taking into consideration non-Indo-European languages.

### 1. Traditional Cases

The notion of finiteness involves a grouping of verb forms into two classes, finite versus nonfinite verb forms. According to the traditional view, finite verb forms are 'limited' by person, number, tense, mood, etc., while nonfinite verb forms (such as infinitive, participles, gerunds) are not marked for these categories. Such definitions are primarily based on the European languages, where there is also a functional distinction underlying the notion of finiteness and correlated with the morphological distinction in a rather straightforward way. More specifically, nonfinite verb forms cannot normally be the only (or the matrix) predicate of independent sentences, but are reserved for other syntactic functions, like attributes, arguments, adverbials, etc. The opposition in finiteness applies also to clauses, where clauses headed by finite and nonfinite verb forms are called finite and nonfinite clauses respectively.

There are, however, marginal cases even in the most familiar European languages where these features are combined in somewhat unexpected ways.

Thus, subjunctives in certain languages, e.g., French, may normally only be used in subordinate clauses, but they still have the whole array of verbal agreement features and are usually considered finite verb forms. Imperatives in a number of languages (like Modern Greek) present an opposite case: they are used only in matrix clauses, but do not agree in person with the subject (which is always in the second person) in the same way as other finite verb forms. The so-called inflected or personal infinitives in Portuguese take personal agreement suffixes (and may combine with the subject in the nominative), but are otherwise identical to noninflected infinitives and occur only in imbedded clauses.

### 2. Usefulness of the Notion 'Finiteness'

Classifying certain problematic forms as finite or nonfinite is of course much more than a question of labeling. It might be hoped that the purely morphological grouping of verb forms in a particular language reflects some other language-specific and/or crosslinguistic generalizations. To start with language-specific generalizations, only finite verb forms in English (those which are marked for tense and which show agreement with the third singular subject in the present) have nonobject pronouns as their subject and may occur with the complementizer *that* (Joseph 1983). These two syntactic features are not confined to English, and combinability with the subject is, in fact, sometimes considered as crucial for the opposition in finiteness itself. Thus, while finite verb

forms typically take subjects, nonfinite verb forms (at least, in a number of languages) either cannot combine with overt subjects at all or take them in another form than in independent sentences. And the absence of personal inflection on nonfinite verb forms would of course be a reflection of this syntactic feature, i.e., nonfinite verb forms have no subject to agree with. However, as Sect. 5 shows, this generalization does not hold universally.

There has been relatively little discussion of cross-linguistic generalizations which could correlate with the notion of finiteness. Within generative grammar, it has been suggested that finite clauses are opaque domains with respect to certain syntactic rules of movement and rules of semantic interpretation (such as reflexivization, reciprocal coindexing, etc.). The term 'finiteness,' however, was hardly used in the earlier versions of generative grammar, which distinguished between clauses in terms of tense, the original proposal formulated as the 'tensed-S condition' (Chomsky 1973). In more recent formulations, the distinction in opacity between certain types of clauses is derived from the more basic binding principles and is said to depend crucially on the presence of verb-subject agreement ('AGR,' see Chomsky 1981; George and Kornfilt 1981). However, the typological data which could confirm these assumptions are still very scarce, and even within the theory of government and binding there is no general consensus on the relation between opacity and finiteness (Fisher 1988; Lefebvre and Muysken 1988).

### 3. Finiteness and Morphology: Inflection versus Derivation

According to the presentation in Sect. 1, the notion of finiteness involves first of all differences in the array of verbal morphological categories characterizing finite and nonfinite forms. With regard to their morphology, 'prototypical' nonfinite verb forms vary quite a lot: some of them have a reduced set of verbal features, as compared to finite verb forms, and thus can be defined negatively; others have in addition acquired certain morphological features which are typical for other, nonverbal words. Examples of the former type are infinitives in French or Russian, which neither take person, number or tense markers, nor can decline according to the nominal pattern. Participles in the same languages more or less mirror the declension of adjectives, with which they share a number of functions, and thus exemplify the latter type of nonfinite forms. In fact, historically, still more nonfinites involve a certain degree of category shift and the difference between the two morphological types of nonfinites is relatively vague. For example, infinitives in many Indo-European languages come from certain oblique cases of verbal nouns. The degree of assimilation to nonverbal words may vary considerably, and as a result there is sometimes faced

the problem of distinguishing between (inflectional) nonfinite verb forms and words, which are derived from verbs, but which in fact belong to other parts of speech.

To take one example, Finnish has a number of infinitives, all of which take nominal possessive suffixes and some of the nominal cases, though not all. They are clearly perceived as inflectional verb forms, which make up a verb paradigm together with finite and other nonfinite verb forms. On the other hand, the so-called verbal nouns in *-minen* (action nominals in Finnish) have the full paradigm of nominal cases and numbers, freely combine with pre- and postpositions and take the same types of dependents as ordinary nouns do. These should probably be better analyzed as regular derivations from verbs (Koptjevskaja-Tamm 1993).

Another difficulty which arises in this connection is that the finiteness opposition may be neutralized for some verbs in a language. Modals in English do not take agreement, like other finite verbs, nor do they have such forms as gerunds in *-ing*, perfect participles, etc.

### 4. Nonfinites and Other Dependent Verb Forms

Prototypical nonfinite verb forms cannot normally be used as matrix predicates. There are, however, still other types of dependent, or 'deranked' verb forms (Stassen 1985; Koptjevskaja-Tamm 1993), i.e., those verb forms which are explicitly marked for not being matrix predicates. In clauses with dependent verb forms it is the form of the predicate itself which signals the subordination of the clause (which does not preclude the use of other means of subordination as well). Thus, in a number of languages, e.g., West Greenlandic (Eskimo-Aleut), Abkhaz (north-west Caucasian), Sotho (Bantu), Montagnais (Algonquian), independent and dependent clauses are structurally quite similar to each other, differing only in their use of independent or dependent 'moods' respectively. Verbs in dependent moods take personal agreement, combine with their subject, and show tense/aspect oppositions similarly to the predicates in independent clauses (though the exact sets of tense/aspect distinctions in both types of clauses may differ). Thus, such forms can hardly be interpreted as lacking typical verbal 'limitations.' Subjunctives, quoted in Sect. 3, may be considered as one of such dependent moods.

### 5. Extending the Notion of Finiteness to Less Prototypical Cases

Languages differ both in their choice of verbal categories that are relevant to an opposition in finiteness and in the ways these are affected by the opposition. To start with tense, while infinitives in German, French, or Russian do not have any tense oppositions, nominalizations in Quechua distinguish

between 'past' and 'future.' Finite verbs in Quechua, however, manifest a fourfold opposition of 'past'—'present'—'future'—'sudden discovery' (Lefebvre and Muysken 1988). Verbal personal agreement with the subject is normally lost in nonfinite verb forms. However, in languages where the head noun in possessive noun phrases agrees with the possessor noun, nonfinite verb forms may take the nominal agreement markers. Thus, in Selkup (Samoyedic), the same suffix -y '1 sg poss gen' appears on the nonderived noun in *utany* 'of my hand,' and on the action nominal in *qentyptāny* 'of my going.' Agreement with the object is more likely to be retained in nonfinite verb forms. Thus, verbal nouns in the Bantu languages retain their class agreement with the object, while various nonfinites in Archi (a northeast Caucasian language) retain class agreement with the object and the intransitive subject.

Finite and nonfinite verbs across languages vary also with regard to the syntactic property mentioned in Sect. 2, combinability with an overt subject. While gerunds (converbs) in Russian do not allow any overt subject, those in Chukchee (Paleosiberian), Tamil (Dravidian), and Archi freely combine with subjects of their own, which appear in the same case forms as in independent sentences. For example, in Archi, *abīabus hēlt'ūsī, nen nāq'ukan ocis kašū* 'The bus not coming, we had to stand for a long time,' the negative gerund *hēlt'ūsī* 'not coming,' takes a subject *abīabus* 'bus, sg nom' (Kibrik 1977). English nominal gerunds (action nominals) take subjects in the *s*-genitive form, while action nominals in Tamil may combine with subjects in the nominative.

## 6. Functions of Nonfinite Forms

Nonfinite verbs across languages have a variety of functions which may be roughly divided into two groups. On the one hand, nonfinites (or rather phrases headed by them) may have various syntactic functions of their own, referring to dependent predication within a larger sentence. On the other, nonfinites may become grammaticized as constituents of 'analytical' or periphrastic verb forms.

The problem of terminology with respect to nonfinite verb forms is acute: there are different linguistic traditions which have their own distinct labels for relatively similar phenomena in different languages; languages vary quite considerably in the range of uses and in the grammatical properties of their nonfinites. To quote one example, verb forms with suffix *-mek*, in Turkish, combine features which are typical of both infinitives and verbal nouns in such languages as Russian or German. More specifically, similarly to infinitives, they can be built from any verb in a very regular way and they combine with objects and with adverbial modifiers in the same way as the corresponding finite verbs. However, like verbal nouns, they can form a constituent with their subject in the

genitive, take (almost) all the nominal case endings, combine with the same range of adpositions, and can be used in the same syntactic contexts as nonderived nouns. Thus, on the one hand it is necessary to (re)define the traditional terms such as infinitive, participle, gerund, verbal nouns and, on the other, to agree on terms which would cover other types of nonfinites.

### 6.1 Nonfinites as Dependent Predicates

The following examples illustrate some uses of nonfinite *-ing* forms in English. In the sentence *I saw a child playing in the street*, the word *playing* is an attribute to the noun *child* (at least, in one of the readings); in the sentences *Playing cards is his favorite occupation* and *He likes playing cards*, *playing cards* is the subject and the complement respectively; while in the sentence *The man was walking further and further away from the town playing the pipe*, *playing* has an adverbial function. Languages with nonfinite verb forms vary considerably in their use of them and in their differentiation.

First of all, languages range from those in which nonfinites make up the only type of subordinated structures (either in general or in certain syntactic positions) to those in which nonfinites are used relatively sparsely. Thus, Tamil (Dravidian), Burushaski (an Indian language isolate), Archi (northeast Caucasian), Imbabura Quechua (Andean) do not use finite clauses as complements to verbs, but have to refer to action nominals, infinitives, etc.

Second, languages vary as to the number of different nonfinite forms and to their degree of syntactic and semantic differentiation. For example, the four different uses of English *-ing* forms given in the beginning of this section may be rendered by at least three different nonfinite forms in Russian, i.e., by the participle *igrājuščego* in the attributive function to the noun *rebenka*, 'child, acc,' by the infinitive *igrat'* in the function of the subject and the complement, and by the gerund or the so-called converb (Ru *deepričastie*) *igrāja* in the adverbial function. These differences are especially obvious in the area of nonfinites which are used in adverbial functions (converbs). These may range from polysemous or semantically vague to highly specialized converbs with temporal meanings (simultaneity, priority, succession) or other adverbial meanings (manner, cause, purpose, result, etc.).

The two issues of variation are of course interrelated, since languages with numerous and highly differentiated types of nonfinites tend to use them at the expense of finite subordinated clauses. In fact, the use of nonfinite verb forms may be so extensive that they appear even in those cases where one should expect sentential or verbal coordination. Thus, a number of languages avoid coordinating two or more clauses with finite verb forms (usually



with the same subject) into one sentence, but prefer instead to turn all but one verb into nonfinites (conjunctive participles). The resulting structure grammatically (and often semantically) involves subordination. Thus, the English sentence *I gave him money and he went to the movie* is rendered by the following sentence in Tamil: *naan* ('I nom') *panam* ('money acc') *kuduttu* ('give-gerund perf') *avan* ('he nom') *sinimaa-vukku* ('movie-to') *poonan* ('go past ind 3 sg'), where the action of his going to the movie is represented by a finite verb, while the preceding action of giving money is perceived as subordinate and is coded by a nonfinite verb form (Stassen 1985). In coordination several actions are treated as being more or less equally important, while in subordination only one action is central and all the other actions are related to it, e.g., as being simultaneous with or prior to it. With respect to the number and importance of nonfinite verb forms, languages are spread rather unevenly. For example, SOV-languages seem to favor the use of nonfinites. The Indo-Asian language area (Masica 1976) provides an unusually high concentration of languages with conjunctive participles.

### 6.2 'Analytical' Verb Forms

Nonfinites are very often grammaticized as being constituents of 'analytical' or periphrastic verb forms. These may express such categories as tense or aspect (e.g., *John is going* or *John has gone*), voice (*The house was built in 1989*), negation, etc.

### 6.3 Diachrony

In their historic development, languages may change relatively drastically in the number and use of nonfinite and finite verb forms. Many languages have introduced finite subordinate clauses under the influence of other languages, sometimes even borrowing their markers of subordination. For example, the Uralic languages, especially those in contact with the Indo-European languages, have gone through a considerable reduction in their set of nonfinite verb forms, which have made way for finite clauses in many of their former positions. Turkish has borrowed the complementizer *ki* from Persian, while many South American indigenous languages have borrowed the complementizer *qué* from Spanish. Amharic (Semitic), on the other hand, has extended its use of nonfinite verbs, which are replacing finite subordinate clauses in many positions.

There is also a general tendency to finitimize nonfinite verb forms, which thus start being used as matrix predicates. For example, infinitives in French can be used in commands instead of the imperative (*Ne pas se pencher dehors* 'Do not lean out'); in certain Russian dialects, adverbial gerunds are used in a predicative function with the 'perfect' meaning (*Syn*

*uže tri goda ženivši* 'The son has been married for three years').

## 7. Is the Opposition in Finiteness Universal?

Basically, the definition of finiteness, as stated in Sect. 1, makes appeal both to morphological and syntactic facts. Understood in this way, not all languages manifest the opposition in finiteness. First of all, some languages make no distinction between independent and dependent verb forms. Thus, in isolating languages, like Mandarin Chinese and Lahu, verbs appear in the same uninflected form in all their functions. Even languages with rich morphology might lack this opposition. A relevant example is presented by Lakhota (Siouan), in which whole clauses with the inflected verb attach a postposed definite article when they are used as dependent predications.

There are still other languages which differentiate between independent and dependent verb forms, but in which it is hardly reasonable to distinguish a class of nonfinites. For example, the Algonquian languages make a relatively consistent distinction between independent and dependent moods (see Sect. 3), but have no other dependent verb forms which could be classified as nonfinite.

On the whole, while it is relatively easy to determine whether a language makes a distinction between independent and dependent verb forms, it is not always easy or even reasonable to apply the notion of finiteness. It is to be hoped that future work will show to what degree there are useful language-specific and crosslinguistic generalizations which are connected to 'finiteness.'

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## Functional Relations

R. D. Van Valin, Jr

Syntactic structure may be divided into two fundamental types: relational and nonrelational structure. 'Relational structure' refers to the relations that exist among major constituents in a sentence, e.g., between a predicate and its arguments or between a head and its modifiers, and these relations may be syntactic, semantic, or pragmatic in nature. 'Nonrelational structure' denotes the hierarchical organization of phrases, clauses, and sentences, however it may be conceived in a particular theory; the commonest conception of nonrelational structure is the X-bar theory of phrase structure. The focus here is on relational structure only, and in particular with the different 'functional relations' that play a role in grammatical description and linguistic theory. Functional relations fall into three basic categories: semantic, pragmatic, and syntactic.

### 1. Semantic Functional Relations

Semantic functional relations are one of the two major types of relation between a predicate and its argument(s); the other type is syntactic relations (see Sect. 3). They are important for a variety of reasons. They are empirically important because they capture the basic structure of events. In other words, they are a way of talking about who did what to whom. When a verb, for example, is associated with an 'agent' argument and a 'patient' argument, something is ultimately being said about the events in the world which this verb could be used to express. Such an event has a participant in it who willfully and intentionally instigates the event, and then there is a less willful participant who is somehow affected by that event. There should be some relationship between the structure of the event and the linguistic encoding of it, since otherwise it would be very difficult to describe events and, more generally, states of affairs linguistically. Semantic functional relations are also called 'participant roles,' because they can be viewed as the linguistic encoding of the parts (in the sense of parts in a play) participants play in an event. They are, therefore, a central component of the semantic structure of the clause. They must be universal, because if a language is going to function, to convey information, it needs to have ways of coding these kinds of relationships.

Semantic functional relations are also very important in linguistic theory. Almost every syntactic theory makes use of these notions in some way, either overtly or covertly (see Sect. 1.3). They have a variety of names in the different theories: semantic roles, case roles, semantic case roles, thematic relations,  $\theta$ -roles, participant roles, and so on. They were first seriously

proposed by Gruber (1965), who termed them 'thematic relations,' and by Fillmore (1968), who called them 'case roles.' Thematic relations and ' $\theta$ -roles' are the terms standardly used for them in generative grammar.

The terms 'agent' and 'patient' are often employed in two distinct senses. First, they are used to refer to narrowly defined participants, i.e., to the willful instigator of an event or action (agent) and to the involuntary affected participant (patient). In this sense they are distinguished from other narrowly defined relations, e.g., experiencer, instrument, or locative. Second, they are often used in a very general sense to refer to the two primary arguments in a transitive predication; in this use, agent and patient are each a cover term for a range of relations. In this broad sense agent subsumes roles like experiencer or force, while patient subsumes theme and goal. Thus semantic functional relations may be divided into two general types, which will be called 'specific thematic relations' and 'generalized thematic relations.' Each will be discussed in the following sections.

#### 1.1 Specific Thematic Relations

Thematic relations describe the semantic function of an argument with respect to the predicate in a sentence. Two very fundamental issues must be raised: first, the level of generality of semantic function that thematic relations should capture, and second, the right inventory of relations, for both descriptive and theoretical purposes. Definitive resolutions of these issues have not been propounded, but they must be addressed.

The issue of generality is as follows. A verb like *kill* has a 'killer' and a 'killed' as arguments, *hear* a 'hearer' and a 'heard,' and *send* a 'sender,' a 'sent,' and a 'sendee.' There are, therefore, three relations with *send*, two with *hear*, and two with *kill*. The issue is whether it is possible to generalize from these statements, e.g., compare the sender of *send* with the killer of *kill* and with the hearer of *hear*. *Believe*, a cognition verb, has a 'believer' and a 'belief.' The debate is whether one can conclude that the believer and the hearer have something in common. Or, similarly, that a killer, a sender, and a dancer have something in common. While it is true that a killer and a sender are not the same thing, they both instigate an event or action, usually volitionally. Therefore, they are purposefully instigating some event. Similarly, with the hearer and the believer, both are having some sort of internal experience, one perceptual and one cognitive. No event or action is being instigated in either case, nor is the experience normally volitional. Thus they

do have something in common. The generality problem can be formulated as follows. Given relations that are similar (for example, hearer, see-er, smeller, and taster can be classed together as perceivers; and believer, thinker, and knower can be classed together as cognizers), is it appropriate to postulate 'perceiver' and 'cognizer' as distinct thematic relations? Or is it appropriate to establish a more general role of 'experiencer,' and then set up 'cognizer' and 'perceiver' as allorrelations of that one more general relation?

These questions cannot be answered purely semantically, because both possibilities can be justified in semantic terms. The answer must, therefore, come from grammatical facts. This should not be surprising, since thematic relations are part of a general theory of grammar. It is necessary, then, to look and see if languages systematically treat perceivers and cognizers as different grammatically, or if they tend to treat them alike. It is generally the case that they do tend to be lumped together, receiving the same morphosyntactic treatment. But, on the other hand, many languages systematically treat experiencers differently from killers, senders, and dancers. In other words, an experiencer, which undergoes an internal state, is treated very differently in the grammar from purposeful instigators. In many languages, for example, subjects which are experiencers appear in the dative case, whereas those which are willful instigators appear in the nominative or ergative case. An example of this can be found in many Indo-European languages, e.g., Russian, German, and Italian, in which some verbs of internal state use the so-called 'inverse construction': the experiencer is in the dative and the thing being experienced is in the nominative, e.g., German *das gefällt mir* (that[NOM] pleases me[DAT]) 'I like that.' This is opposed to *kill*, *send*, and *dance*, where the entities killing, sending, and dancing are in the nominative. Underlying the common treatment of experiencers is a neutralization of otherwise valid semantic contrasts within the grammar. It would be hard to argue, on any kind of reasonable 'grammatical' grounds, that believers ought to be separated from knowers, thinkers, expecters, and assumers. Since it would be hard to justify this, they are all grouped together as cognizers. Similarly, it would be hard to justify see-ers, feelers, hearers, touchers, smellers, and tasters as all being different; hence they are all grouped together as perceivers. Clause-internal phenomena like case marking tend to treat them alike, and on these grounds they are often classed together under the general label of experiencer.

The fundamental issue here is to justify these distinctions on grammatical grounds, because ultimately, thematic relations act as an interface between lexical semantics and syntax. In other words, they do double duty. On the one hand, they are semantic in nature and related to the lexical semantic representation of the verb, because they are a function of the meaning of

the verb. And the richer and more detailed the representation of the meaning of the verb, the more distinctions can be made. For example, a richer representation would permit the representation of the nuances which separate a believer from a knower. This is ultimately a part of a speaker's linguistic competence. But this distinction does not appear to be necessary for the grammar. On the one hand, these roles are a part of the lexical semantic representations of verbs, while on the other hand, they have grammatical implications. The thematic relations posited have to be faithful to their semantic basis, but they also have to be sensitive to the demands of grammar.

The solution to the problem of the correct inventory of thematic relations is ultimately a theory-internal issue; different theories and approaches have proposed inventories ranging from three to several dozen thematic relations. Since, as argued above, thematic relations must be justified grammatically as well as semantically, the grammatical justifications would be couched in terms of particular grammatical theories. Moreover, the size of the inventory depends crucially on the task(s) which thematic relations are assigned. There are two basic functions they can serve: (a) they can be part of the system of lexical representation, wherein they represent aspects of the verb's meaning (as in, e.g., Fillmore 1968); and (b) they can play a role in the statement of grammatical rules, principles, or constraints. It is the first function that has led to large inventories of thematic relations: if they are used to capture meaning contrasts among verbs, then a large number will be needed to express the great variety of verbal semantic contrasts. If, on the other hand, their function is limited to the second one, then only as many will be needed as the syntax requires, and this is a much smaller number than that required for a lexical representation function.

While it would be quite impossible to review all of the inventories proposed by different theories, it is possible to construct a list of thematic relations that are standardly referred to in most accounts. This is given in Table 1.

One solution to the inventory problem suggested in Foley and Van Valin (1984) and elaborated in Van Valin (1993) and Van Valin and LaPolla (1997) is not to propose an absolute universal list of roles but rather to posit a universal semantic continuum in terms of which languages may make a varying number of distinctions. In this continuum of thematic relations, agent defines one end and patient the other; all of the other thematic relations represent points along the continuum, and there is no absolute number of distinctions which every language must make, although there is strong evidence that certain of these distinctions are universal. The continuum may be represented as in Fig. 1. The anchor points of the thematic relations continuum are agent (the willful, volitional, instigating participant) at one end and

## Functional Relations

patient (the non-willful, non-instigating, maximally affected participant) at the other. In between the polar entities, there is a continuum of semantic relations of more agent-like and patient-like roles. This continuum is flexible, for languages divide it up in different ways. There are, however, certain restrictions upon the ways that it can be divided up.

Furthermore, the divisions are not random, for there are common divisions across languages. Languages distinguish entities which are affected in terms of their state or condition from those which are affected in terms of location. Therefore, they differentiate patients from things that are clearly at the right end of the scale but are less patient-like, namely themes. Themes are not affected in the same way and to the same degree, because they do not get crushed and chopped, but they do get moved around. Therefore, themes are clearly at the right end of the continuum, and are not agent-like. On the other hand, there are things on the left side of this continuum which can be causal, but not instigating or controlling. Examples of this include instruments and forces. (See Van Valin and Wilkins 1996 for extensive discussion of agent, instrument and force.) Further to the right, toward the center of the continuum, is the experiencer, which is the locus of an internal event, but is certainly not willful, volitional, and instigating. Many perceptual events are not volitionally instigated. The difference between verbs like *look at* and *see* is that the subject of *look at* is an experiencer which is also an agent, while the subject of *see* is simply an experiencer. In the middle of the continuum, there are all of the various types of locatives. In fact, many more can be found in the world's languages than are represented in Fig. 1. Typically things like recipient, source, goal, and path do not interact with each other, but rather with the theme. Figure 1 represents a continuum of distinctions, and languages may make more or fewer of them than what is listed above. This seems to be the semantic range that needs to be expressed in all languages. There appear to be as many roles as can be motivated, as long as they fall on the continuum in Fig. 1. And, in fact, the same distinctions recur across languages; the same contrasts between experiencer and agent, instrument and agent, theme and locative, and so on, are found in language after language.

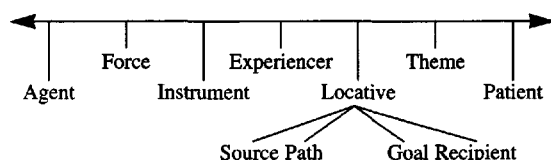


Figure 1. The combined effect of EXT and CONS.

Table 1.

- agent:** a willful, purposeful instigator of an action or event, such as in *John broke the glass*.
- experiencer:** things that experience internal states, such as perceivers and emoters (subjects of verbs like *think*, *believe*, *love*, and *hate*) as in *John thought about the question*.
- instrument:** usually inanimate things that are manipulated by an agent in the carrying out of an action, as in *John broke the window with the rock* or *The rock broke the window*. In both cases *rock* is the instrument of an agent, whether the agent is specified or not.
- force:** involuntary causal participant which, unlike an instrument, cannot be manipulated. They can include things like *tornados*, *storms*, and *acts of God*, as in *The flood washed away the village*.
- patient:** things that are in a state or condition, or undergo a change of state or condition as in *John is tall*, *John is sick*, *The window broke*, and *John died*.
- theme:** things which are located or are undergoing a change of location (motion), as in *The book is on the table* or *John put the book on the table*.
- recipient:** someone who gets something (recipients are almost always animate), as in *He sent the book to John* or *He sent John the book*.
- goal:** destination, which is similar to recipient, except that it is inanimate, as in *He sent the book to Philadelphia*.
- source:** the origin of an event or action. It is used in a variety of situations, which can conflate the ambiguity between recipient and goal:

	transfer		recipient
source x	y	→	z
	motion		goal

(x = initial position, y = object, and z = final position)

If there is a transfer of y then z is a recipient. If y is in motion, then z is a goal. In either case, x is the source, and y is the theme. No distinction is usually made between source of motion and source of transference, even though there is a distinction between recipient and goal.

**locative:** a location. Path, source, and goal can be viewed as elaborations of different aspects of locatives. Locatives contrast with the others by referring to a situated location, such as in *The book is on the table*.

**path:** a route, as in *He ran from the house, along the creek to the park*.

Jackendoff (1987) takes a somewhat different approach to specific thematic relations. He posits several tiers of thematic relations: an action tier and a temporal tier in addition to the basic level of the thematic tier. The thematic tier deals with motion and location, the action tier with attributions of responsibility and affectedness, and the temporal tier with aspectual properties of events. The thematic tier is primarily concerned with the roles of theme, goal, and source, while agent and patient appear only on the action tier. This is exemplified in (1), with examples from Jackendoff (1987).



- (a) The car [Theme<sub>TH</sub>] hit the tree [Goal<sub>TH</sub>; Patient<sub>AC</sub>]. (1)  
 (b) Pete [Source<sub>TH</sub>; Agent<sub>AC</sub>] threw the ball [Theme<sub>TH</sub>; Patient<sub>AC</sub>].  
 (c) Bill [Theme<sub>TH</sub>; Agent<sub>AC</sub>] entered the room [Goal<sub>TH</sub>].

('TH' denotes a role from the thematic tier, 'AC' one from the action tier.)

In this scheme, an argument may bear multiple specific thematic relations, each reflecting one facet of its interpretation.

### 1.2 Generalized Thematic Relations

It has been proposed that a second, more general type of semantic relation must be posited: 'semantic macroroles' or 'semantic proto-roles.' Originally proposed in Van Valin (1977) and further developed in Foley and Van Valin (1984) and subsequent work, semantic macroroles are generalized semantic relations which subsume groups of specific thematic relations. There are two macroroles, 'actor' and 'undergoer.' They are the two primary arguments of a transitive predication, corresponding to the general senses of 'agent' and 'patient' discussed in Sect. 1, either one of which may be the single argument of an intransitive verb. They correspond to what is pre-theoretically commonly called 'logical subject' and 'logical object.' Macroroles are motivated by the fact that in grammatical constructions groups of thematic relations are treated alike. This is illustrated in (2)–(4).

- |  |             |     |
|--|-------------|-----|
| (a) Fred broke the window.                         | Agent       | (2) |
| (b) The bomb destroyed the car.                    | Instrument  |     |
| (c) Mary received a parking ticket.                | Recipient   |     |
| (d) The farm animals sensed the earthquake.        | Experiencer |     |
| (e) Stars emit light.                              | Source      |     |
| (a) Max tossed the book to the teacher.            | Theme       | (3) |
| (b) The tidal wave destroyed the harbor.           | Patient     |     |
| (c) The rock hit the wall.                         | Locative    |     |
| (d) The mugger robbed Tom of \$45.00.              | Source      |     |
| (e) Will presented Sheila with a bouquet.          | Recipient   |     |
| (a) The window was broken by Fred.                 | Agent       | (4) |
| (b) The car was destroyed by the bomb.             | Instrument  |     |
| (c) The earthquake was sensed by the farm animals. | Experiencer |     |
| (d) The book was tossed to the teacher by Max.     | Theme       |     |
| (e) The harbor was destroyed by the tidal wave.    | Patient     |     |
| (f) The wall was hit by the rock.                  | Locative    |     |

In (2) agent, instrument, recipient, experiencer, and source are all treated as the actor and subject of a transitive verb, while in (3) theme, patient, locative, source, and recipient are treated alike as the undergoer and object of a transitive verb. These groupings are not equivalent to (surface) grammatical relations like subject and direct object, for they hold in passive constructions as well, as illustrated in (4); here the undergoer is subject and the actor the object of *by*. If

this alternation were to be stated in terms of specific thematic relations, then long disjunctive lists of thematic relations would be required: in an active clause, the agent, instrument, recipient, experiencer, or source is subject and the theme, patient, locative, source, or recipient is object, while in a passive clause the theme, patient, locative, source, or recipient is subject and the agent, instrument, recipient, experiencer or source is the object of *by*. This is an undesirable analysis, as it clearly does not capture what is going on. Alternatively, a formulation in terms of macroroles is much simpler: in an active clause, the actor is subject and the undergoer direct object, while in a passive clause the undergoer is subject and the actor is the object of *by*.

With intransitive verbs similar generalizations hold. Some intransitive verbs take an actor as their single argument, while others take an undergoer. This is illustrated in (5)–(6).

- |                                       |             |     |
|---------------------------------------|-------------|-----|
| (a) David sang loudly.                | Agent       | (5) |
| (b) The ball flew over the fence.     | Theme       |     |
| (c) The motor is running well.        | Instrument  |     |
| (a) The dog was sitting on the table. | Theme       | (6) |
| (b) Larry got fat.                    | Patient     |     |
| (c) Marge felt sick.                  | Experiencer |     |

The subjects in (5) are all actors, despite the range of thematic variation, and those in (6) are undergoers. As with transitive verbs, each macrorole subsumes a number of specific thematic relations.

Dowty (1991) proposes two generalized thematic relations which he calls 'proto-roles'; they are 'proto-agent' and 'proto-patient.' They are similar in certain respects to actor and undergoer, but they are embedded within a very different theoretical outlook: Dowty claims that proto-roles are the only valid thematic relations, and he denies the validity of specific thematic relations like agent, theme, and patient. Proto-roles are constellations of features which define a prototype; they are not generalizations of specific thematic relations, unlike macroroles. Van Valin (1999) surveys and compares theories of generalized semantic relations.

The relationship between specific and generalized thematic relations is captured in Fig. 2, which represents the increasing generalization and neutralization of semantic distinctions involved in them. (Not all specific thematic relations and not all groupings of specific thematic relations into generalized relations are illustrated.)

### 1.3 Role of Semantic Relations in Syntactic Theories

Most syntactic theories employ semantic relations in some way; Generalized Phrase Structure Grammar (GPSG) (Gazdar, et al. 1985) and Montague Grammar (MG) (e.g., Dowty 1979) are the major exceptions. Specific thematic relations are a central feature of lexical entries for verbs in both Government-

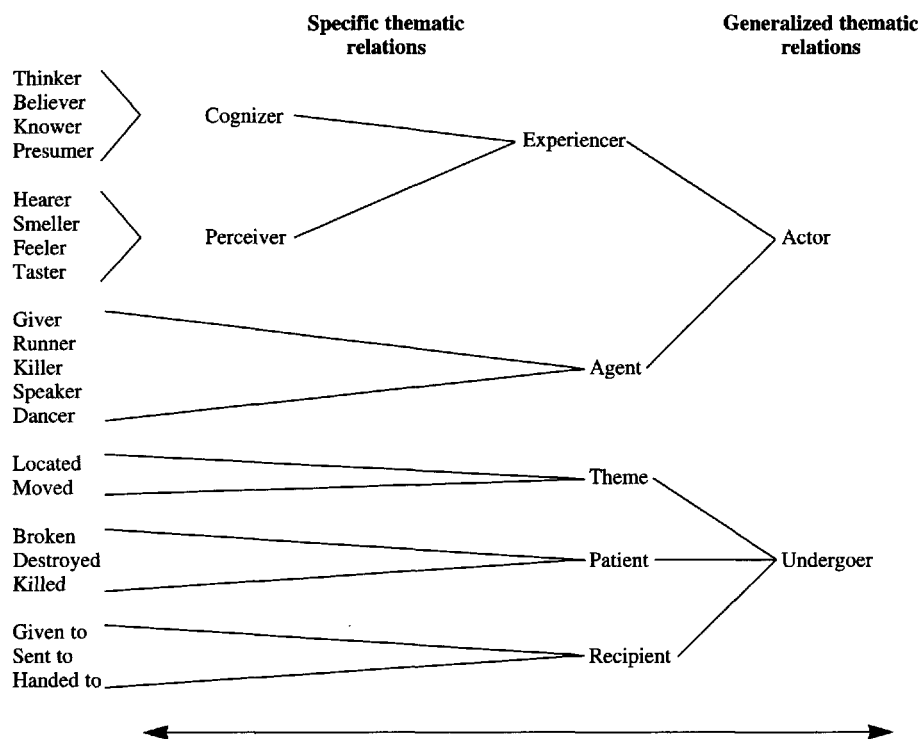


Figure 2.

Binding Theory (GB) (Chomsky 1981) and Lexical Functional Grammar (LFG) (Bresnan 1982); they are assumed to be part of the lexical entries for verbs in work in Relational Grammar (RelG) (Perlmutter 1982), but there is no explicit discussion of either thematic relations or lexical entries within RelG (see *Binding*).

Thematic relations function differently in GB and LFG. The list of (specific) thematic relations associated with a verb, its *θ-grid*, plays a central role in the GB system; syntactic subcategorization information is deduced from it, and this in turn underlies the constraints imposed by the Projection Principle. D-structure is assumed to be a *pure* syntactic representation of the argument structure of a verb, which is represented by the *θ-grid*. Moreover, *θ*-role assignment is an important part of the derivation of a sentence, and the principle which governs it, the *θ*-criterion, is one of the major constraints in the GB system. In LFG, on the other hand, *θ*-roles are associated with grammatical relations (called, 'grammatical functions' in LFG) in the lexical entries of verbs, and lexical rules operate to change the linkings between thematic relations and grammatical functions, e.g., passive relinks the agent from subject to oblique and the theme from object to subject. In both theories *θ*-roles serve as the primary means for representing

the *meaning* of a verb, but neither theory assumes an explicit theory of lexical semantics or proposes any independently motivated principles which govern the assignment of specific *θ*-roles to particular verbs. This is more of a problem for LFG than GB; in GB nothing depends on which *θ*-role an argument receives, as long as it receives one (and only one), whereas in LFG the validity of the syntactic analysis depends crucially in many instances on the identity of the *θ*-role assigned, e.g., the analysis of locative inversion in Chicheŵa in Bresnan and Kanerva (1989). Hence, without independent criteria for determining which *θ*-role an argument is linked to, the validity of such analyses is open to serious question. Thus, while thematic relations are an important feature of the GB and LFG systems of lexical representation for verbs, their respective functions within the overall theory are very different in the two frameworks theory which makes use of both specific and generalized thematic relations is Role and Reference Grammar (RRG) (Foley and Van Valin 1984, Van Valin 1993). RRG posits only one level of syntactic representation, unlike GB and RelG, and *θ*-roles, especially macroroles (generalized thematic relations), serve a crucial function in the linking of semantic and syntactic representations. Some of the generalizations captured by macroroles (see (2)–(6) above) are handled in other

theories by D-structure (GB)/initial stratum (RelG) grammatical relations, but macroroles are not equivalent to underlying grammatical relations (see Van Valin 1990). Unlike GB and LFG,  $\theta$ -roles are not part of the scheme for lexical representation of verbs; that is accomplished by a modified version of the system of lexical decomposition proposed in Dowty (1979). Moreover, there are independent principles governing the association of specific  $\theta$ -roles with particular verbs, and therefore RRG is the only theory in which the assignment of thematic relations to verbs is independently motivated.

## 2. Pragmatic Functional Relations

Pragmatic functional relations are concerned with the distribution of information in utterances, in particular with respect to what is assumed by the speaker to be known to interlocutors and what is presented as new and informative. Research on this type of functional relation goes back at least to the Prague School linguists of the 1920s, e.g., Mathesius, and has continued in modern work, e.g., Firbas (1966) and Sgall, Hajičová and Panevová (1986). Pragmatic relations have played a role in contemporary linguistic theory and description in the work of Halliday (1967, 1985), Jackendoff (1972), and Kuno (1972a,b; 1975), among others.

There is a fundamental distinction in information structure which all of these different approaches seek to capture, namely that between the material in an utterance which is presented by the speaker as assumed to be known, accessible, or recoverable from context by interlocutors and that which is presented by the speaker as unknown, inaccessible, and not recoverable, hence as new and informative. Different approaches vary both with respect to how this contrast is labeled and exactly how the opposition is defined, but this basic distinction underlies all of them. In Prague School work, for example, 'theme' (known, given) is distinguished from 'rheme' (unknown, new), while in most contemporary work the terms 'topic,' 'focus,' and 'presupposition' are employed. They may be characterized as follows, following Lambrecht (1986, 1987, 1988).

*Pragmatic presupposition:* 'the proposition or set of propositions which the speaker assumes the hearer considers true (believes, knows) and is aware of at the time of the utterance and which is relevant in the context of utterance.'

(Lambrecht 1988: 1)

*Topic:* 'What must be presupposed in the case of a topic is not the topic itself, nor its referent, but the status of the topic reference as a possible center of interest or matter of concern in the conversation ... [T]he topic reference is *active* or *accessible* in the discourse ... [T]he topic is contained in the pragmatic presupposition or is an element of the pragmatic presupposition.'

(Lambrecht 1986: 102)

*Focus:* The focus of an utterance is the non-presupposed part of the utterance; it is the part that is asserted in a declarative utterance and questioned in an interrogative utterance. In English and many other languages, it is indicated by prosodic prominence.

These notions are derivable from Kempson's (1975) reformulation of Grice's (1975) maxim of quantity (see Van Valin 1981). They are universal, as they follow from the essential communicative function of language.

Lambrecht proposes a typology of information structure patterns with different topic—focus arrangements. The least marked one distributionally involves a topical subject and a focal predicate and corresponds to the traditional 'topic-comment' bifurcation of clauses; he labels it a 'predicate focus construction.' Presentational sentences like *There arose a great storm* lack a topical lexical subject NP and contain virtually all focal material; these are termed 'sentence focus constructions' by Lambrecht and 'neutral description utterances' by Kuno (1972a,b). Finally, utterances in which the focus is restricted to a single constituent, e.g., the answer to a wh-question, are called 'narrow focus constructions.' These constructions are found in all languages, and a variety of means are employed to signal them. English distinguishes them primarily by means of prosody and clefting. Japanese uses particles: unstressed *wa* marks the topic(s) in a predicate focus construction, stressed *wa* and stressed *ga* ('exhaustive listing *ga*' in Kuno) mark narrow focus constructions, and unstressed *ga* indicates sentence focus constructions. Italian employs word order, prosody, and clefting: predicate focus involves (S)VO order, sentence focus VS order, and narrow focus a cleft in which the focus NP appears postverbally in the matrix clause (see Lambrecht 1986, 1987, 1994 for detailed discussion).

It has long been noticed that there appear to be correlations between information structure and grammatical structure. Given that in the vast majority of languages topical, presupposed material tends strongly to precede focal, non-presupposed material in utterances, constructions which involve displacement of elements from their default position to the left toward the onset of the utterance could be analyzed as having a topicalizing function, while those which entail the displacement of elements to the right toward the end of the utterance could be analyzed as having a focalizing function. Subject inversion in Romance languages like Italian and Spanish, for example, can be viewed as motivated by the need to place the subject in the immediately postverbal focus position in these languages in a sentence focus or narrow focus construction. Similarly, passivization can be interpreted as a construction in which the undergoer, which would normally appear in the pre(OV)/post (VO)-verbal focus position, occurs instead in the

normally topical subject position, as a reflection of its topical status in the discourse context, while the actor, the topical subject in the default case, appears in the normally focal portion of the utterance (if it appears at all). The occurrence of normally clause-internal material in utterance-initial position, as in topicalization and left-dislocation constructions, is another example of pragmatically motivated syntax (see, e.g., Prince 1951a,b; Horn 1986).

Many syntactic theories simply ignore pragmatic functions. To the extent that the correlations noted above between syntactic structures and pragmatic functions is acknowledged, it is nevertheless considered to fall outside of the realm of grammar. Halliday's Systemic-Functional Grammar (Halliday 1994) and Dik's Functional Grammar (Dik 1989) are very concerned with pragmatic functions, and only two of the theories mentioned in Sect. 1.3 make any systematic use of these functions, namely LFG and RRG. Both theories recognize all three types of functional relation, but they are treated differently in them. LFG views them as autonomous, and an argument can be described in terms of all three independently; that is, a subject can be an agent or a theme and a topic or a focus, for example. In RRG, on the other hand, syntactic (grammatical) relations are analyzed as being grammaticalizations of semantic and pragmatic relations, as will be discussed in the next section.

### 3. Syntactic Functional Relations

Syntactic functional relations, or grammatical relations, are the focus of considerable controversy within syntactic theory. Some theories, e.g., RelG and LFG, consider them to be a fundamental and indispensable component of linguistic theory and analysis. Others, e.g., GB and RRG, treat them as derivative of other, putatively more basic concepts, while GPSG ignores them altogether. GB derives grammatical relations from phrase-structure configurations: subject is the NP immediately dominated by S (Chomsky 1965), or, more recently, SPEC(ifier) of IP (= INFL" = S) (Chomsky 1986), while object is the NP immediately dominated by VP (Chomsky 1965) or V' (Chomsky 1986). The RRG theory of grammatical relations differs markedly from all generative accounts, and it will be discussed below.

#### 3.1 Grammatical Relations

Since both LFG and RelG claim to be theories of universal grammar, their postulation of grammatical relations as fundamental components of linguistic theory raises the vital issue of their universality. If valid cross-linguistic universals are to be stated in terms of them, then they must themselves be universally valid constructs. The first step in ascertaining their validity as primitive (non-derived) theoretical

constructs is characterizing them in such a way that their existence in a grammatical system can be demonstrated.

A grammatical relation exists when there is a restricted neutralization of semantic roles for syntactic purposes. Grammatical relations result from the extension of the pattern of neutralization represented in Fig. 2 to the neutralization of all semantic role contrasts. Consider the following examples from English (7):

- (a) Henry seems to be singing in the shower. (7)
- (b) Henry seems to be elated.
- (c) Henry seems to be watching a new video.
- (d) \*Henry<sub>i</sub> seems Louise to have embarrassed \_\_\_\_<sub>i</sub>.
- (e) Henry seems to have been embarrassed by Louise.

In (7) an argument of the dependent clause appears in the matrix clause. In (7a) the 'raised' argument is the actor of the intransitive verb *sing*, while in (b) it is the undergoer of the intransitive predicate *be elated*. The verbs in the remaining examples are transitive; the raised argument in (c) is the actor of *watch* while in (d) and (e) it is the undergoer of *embarrass*. It is clear that the restriction on which argument can be raised cannot be stated in semantic role terms: it can be either an actor or an undergoer, and the crucial contrast between (d) and (e) cannot be explained in purely semantic terms. Rather, it must be accounted for syntactically: the argument which can be raised is the one which bears a particular syntactic relation in the dependent clause, and it bears this relation in the passivized dependent clause in (e) but not in the active clause in (d) in which it has a different syntactic function. Hence there is a restricted neutralization of semantic roles with regard to which argument of the dependent clause can appear in the matrix clause, and the relation that this neutralization defines is the traditional notion of 'subject' for English. The same argument can be made with respect to the relation which triggers finite verb agreement in (7); it cannot be characterized semantically, because all semantic role possibilities are represented in (7a, b, c, e). (Note that it makes no difference for this argument whether specific or generalized thematic relations are assumed.) Here again a restricted neutralization defines the same syntactic relation as in the raising construction.

Grammatical relations are defined only by restricted neutralizations of semantic roles; neither unrestricted neutralizations nor restrictions without neutralization define a syntactic relation. An example of an unrestricted neutralization is relativization with a *wh*-relative pronoun in English. This clearly involves a neutralization of semantic roles, as the relativized NP can bear virtually any thematic relation, specific or general, to the predicate in the relative clause. This is illustrated in (8).



- Mary talked to the man (8)  
 (a) who [actor, agent] bought the house down the street.  
 (b) who [undergoer, patient] the dog bit.  
 (c) to whom [recipient] Bill showed the house.  
 Mary looked at the box  
 (d) in which [locative] the jewelry was kept.  
 (e) out of which [source] the jewelry had been taken.

There appear to be no semantic restrictions of the relevant type on the relativization strategy in English, and therefore this is an example of a neutralization of semantic roles for syntactic purposes. However, this construction does not define a grammatical relation in English, unlike raising and finite verb agreement, because it is not restricted. The converse, a restriction without neutralization, can be found in possessor ascension in Acehnese, an Austronesian language spoken in Sumatra. The basic facts are presented in (9), from Durie (1987).

- (a) *Seunang até lôn.* (9)  
 happy liver 1SG  
 'I am happy.' (lit: 'My liver is happy.')
- (b) *Lôn seunang-até.*  
 1SG happy-liver  
 'I am happy.'
- (c) *Ka lôn-tët rumoh gopnyan.*  
 IN 1SGA-burn house 3SG  
 'I burned her house.'
- (d) *Gopnyan ka lôn-tët-rumoh.*  
 3SG IN 1SGA-burn-house  
 'I burned her house,' or 'She had her house burned by me.'
- (e) *\*Gopnyan ka aneuk-woe.*  
 3SG IN child-return  
 'His/her child returned.'

Possessor ascension is possible only if the possessed argument functions as an undergoer in the clause; the transitivity of the verb is irrelevant. In (9a) the single argument of *seunang* 'be happy' is *até lôn* 'my liver,' which is the undergoer of the stative predicate. In (9b) *lôn* 'I' functions as subject and *até* is compounded with *seunang*. In (9c) the undergoer of the transitive verb *tët* 'burn' is *rumoh gopnyan* 'his/her house,' while in (9d) the possessor *gopnyan* 'he/she' appears as an independent argument and *rumoh* 'house' is incorporated into the predicate. This is impossible with the possessor of an actor argument, as (9e) shows. Thus possessor ascension in Acehnese involves a definite restriction, i.e., the possessed NP must be an undergoer argument, but there is no neutralization of semantic roles; consequently, the relation specified is not a syntactic (grammatical) relation but rather a semantic one. It is only when there is both a restriction and a neutralization that a grammatical relation is involved.

If one were to investigate every major syntactic construction in English, it would be seen that the

results were either like that in (7), in which a particular restricted neutralization is found, or like that in (8) in which there is a neutralization without a restriction. The pattern of restricted neutralizations across constructions is very consistent in English, and it is this pattern which constitutes and defines the grammatical relation 'subject' in English. Grammatical relations are consistent patterns of restricted neutralizations in a language.

### 3.2 Universal Grammatical Relations

There are two senses in which grammatical relations could be considered universal, a strong one and a weaker one. The strong sense is that there are grammatical relations in every human language. That is, in the grammar of every human language there is at least one construction in which there is a restricted neutralization of semantic roles for syntactic purposes. If it can be demonstrated that there is at least one language in which this is not the case, then grammatical relations are not universal in the strong sense. The weaker sense of universality is that in all of the languages that have grammatical relations, they play the same role in every language. This is based on the Saussurean notion of linguistic 'value': two linguistic entities are the same if they have the same value, i.e., they enter into the same relations of cooccurrence and contrast within the linguistic system. This weaker sense of universality is, then, the claim that grammatical relations in different languages have the same value in each linguistic system. In this domain value is determined by the restricted neutralizations defining the relations: two systems of grammatical relations are the same if they are defined by the same (or comparable) restricted neutralizations.

As noted above, grammatical relations are not universal in the strong sense if there is a single language which exhibits no restricted neutralizations in its grammar. Acehnese is such a language, as argued in Durie (1987): there are restrictions without neutralizations, as in (9), and neutralizations without restrictions, as in (8), but there are no restricted neutralizations of semantic roles for syntactic purposes in the language. The full range of Acehnese data cannot be presented here, but three representative sets can be given. Grammatical constructions fall into three groups in this language: those in which only actor arguments may be involved, those in which only undergoer arguments may be involved, and those in which any argument of the verb may be involved. The second type has already been exemplified in (9). Before presenting the other two, it is necessary to give a brief introduction to verb classes and agreement in Acehnese. All examples are from Durie (1987).

Acehnese transitive verbs may carry agreement clitics cross-referencing both primary arguments, the actor and the undergoer. This is illustrated in (10).

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- (a) Gopnyan    *geu-mat*    *lôn./geu-mat-lôn.*    (10)  
                  3SG            3A-hold    1SG/3A-hold-1SGU  
                  '(S)He holds me.'
- (b) (Lôn)            *lôn-mat*    *gopnyan.*  
                  1SG            1SGA-hold 3SG  
                  'I told him/her.'

The clitics for actor and undergoer have the same basic form; they are distinguished by position, with actor signaled by a proclitic and undergoer by an optional enclitic. Thus *geu-* cross-references the actor and *-lôn* the undergoer in (10a), while *lôn-* cross-references the actor in (10b). Intransitive verbs fall into two general classes in terms of which agreement they take: some take only actor proclitics, e.g., *jak* 'go,' while the others take only the undergoer enclitics, e.g., *rhêt* 'fall.' This is exemplified in (11).

- (a) (Gopnyan) *geujak./\*gopnyan jak (-geuh).*    (11)  
                  3SG            3A-go            go(3-U)  
                  '(S)He goes.'
- (b) (Lôn) *lôn-jak./\*lôn jak(-lôn)*  
                  1SH    1SGA-go            go(-1SGU)  
                  'I go.'
- (c) Gopnyan *rhêt(-geuh)/\*gopnyan geu-rhêt*  
                  3SG            fall(-3U)            3A-fall  
                  '(S)He falls.'
- (d) Lôn *rhêt(-lôn)/\*lôn lôn-rhêt*  
                  1SG            fall(-1SGU)            1SGA-fall  
                  'I fall.'

Constructions involving the verb *tém* 'want' can only have complements in which the verb takes an actor argument, and the cross-reference clitic for the actor is obligatorily omitted; intransitive verbs which take only an undergoer argument are impossible in this construction, and with a transitive verb the omitted argument must always be the actor, never the undergoer. This is illustrated in (12).

- (a) Gopnyan *geu-tém* [(*\*geu-*)*jjak*].    (12)  
                  3SG            3A-want            go  
                  '(S)he wants to go.'
- (b) *Geu-tém* [(*\*geu-*)*taguen bu*].  
                  3-want            cook    rice  
                  'She wants to cook rice.'
- (c) \*Gopnyan *geu-tém* [*rhêt*].  
                  3SG            3A-want fall  
                  '(S)he wants to fall.'
- (d) \*Aneuk agam nyan *ji-tém* [*geu-peurêksa lé dokto*].  
                  child    male    that 3A-want 3A-examine    by doctor  
                  'That child wants to be examined by the doctor.'

(The Acehnese construction in (12d) is not a passive: see Durie 1988 for detailed arguments. *Geu-* and *ji-* are both third person but differ in the social status they code; *geu-* cross-references the higher status doctor, while *ji-* agrees with the lower status child.) Both *jak* 'go' and *taguen* 'cook' take actor arguments, and the actor clitic is obligatorily omitted in the dependent clause in (12a, b). *Rhêt* 'fall,' on the other hand,

takes only an undergoer argument, and it is impossible in this construction, as (12c) shows. In (12d) the omitted argument in the complement clause must be interpreted as the undergoer, and the result is ungrammatical. Thus this construction is restricted to verbs which take an actor argument, and the actor argument must be omitted; this is an example of a restriction without a neutralization. The difference between this construction and the one in (9) is that possessor ascension is restricted to undergoer arguments only, while this one is restricted to actor arguments only. These two constructions are representative of the majority of syntactic constructions in Acehnese.

There are, however, constructions which involve an unrestricted neutralization, e.g., raising. This is exemplified in (13).

- (a) Gopnyan *teuntée* [*geu-woe*].    (13)  
                  3SG            certain 3A-return  
                  '(S)he is certain to return.'
- (b) Gopnyan *teuntée* [*meungang-geuh*].  
                  3SG            certain win-3U  
                  '(S)he is certain to win.'
- (c) Gopnyan *teuntée* [*geu-heuet hikayat prang sabi*].  
                  3SG            certain 3A-recite    epic  
                  'He is certain to recite the Prang Sabi epic.'
- (d) Hikayat prang sabi *teuntée* [*geu-beuet*].  
                  epic                            certain 3A-recite  
                  'The Prang Sabi epic is certain to be recited by him.'
- (e) Gopnyan *lôn-anggap* [*na neu-bi pèng baroe*].  
                  3SG            1SG-consider be 2A-give money yesterday  
                  'I believe him to have been given money by you yesterday.'  
                  (lit.: 'I consider him<sub>i</sub> [you gave money [to] \_\_\_\_\_<sub>i</sub> yesterday].')

The raised argument is an actor in (13a, c), an undergoer in (b, d), and a recipient argument in (e); Durie states that any core argument of the verb can be raised in this construction. Hence in this construction, unlike the others, there is a neutralization of semantic roles for syntactic purposes, but it is not restricted. Therefore it does not define a grammatical relation. Neither actor nor undergoer nor 'any argument of the verb' constitutes a grammatical relation.

Acehnese thus presents an example of a language which exhibits no restricted neutralizations of semantic roles in its syntax and therefore lacks grammatical relations as defined in Sect. 3.1. Another example of such a language is Mandarin Chinese; Li and Thompson (1976) argue that pragmatic functional relations are the relevant relations in Mandarin grammar, and LaPolla (1990) shows that there is no evidence to support the positing of purely syntactic relations in Mandarin syntax. Consequently, the strong sense of universality cannot be maintained. The validity of the weaker sense can be tested by contrasting English with Warlpiri (Andrews 1985), a language of Central

Australia. The construction to be examined involves omission of an argument in a dependent clause; it is illustrated in (14).

- Ngaju-rlu Ø-rna yankirri pantu-rnu, ngapa (14)  
 I-ERG AUX-I emu (ABS) spear-PAST water (ABS)  
 nga-rninja-kurra  
 drink-INF-while  
 'I speared the emu while it (not I) was drinking water.'

Andrews states that the missing argument in the *-kurra* construction is always the subject of the non-finite clause. In semantic role terms, the omitted argument is the actor of *nga-* 'drink.' The actor argument of an intransitive verb can also be omitted, and in the sentences in (15) the omitted argument in each is the undergoer of an intransitive verb.

- (a) Ngaju ka-rna-ngku mari-jarri-mi (15)  
 I(ABS) PRES-I-you grief-being-NONPAST  
 nyuntu-ku, murumuru nguna-nyja-kurra-(ku)  
 you-DAT sick lie-INF-while-(DAT)  
 'I feel sorry for you while you are lying sick.'  
 (b) Karli Ø-rna nya-ngu pirli-ngirli  
 wanti-nyja-kurra  
 boomerang(ABS) AUX-I see-PAST stone-ELATIVE  
 fall-INF-while  
 'I saw the boomerang fall from the stone.'

In (15a) the verb is *nguna* 'lie' as part of the expression 'lie sick,' which can plausibly be assumed to be non-volitional since people do not volitionally lie sick, and in (15b) it is *wanti* 'fall.' These two verbs do not take actors as their single argument, and yet it is possible for it to be omitted in this construction. This shows that the restriction on which argument is omitted in the dependent clause cannot be stated in purely semantic role terms. Therefore, with intransitives, there is an example of a restricted neutralization of semantic roles for syntactic purposes in Warlpiri, and this shows that the language has grammatical relations.

Is there an analogous neutralization in sentences with transitive verbs? The restricted neutralization in (14) and (15) parallels that in English in (7a, b) with intransitive verbs and (7c) with an active voice transitive verb. In English there is a restricted neutralization with transitive verbs, as shown in (7c, d, e); the relevant Warlpiri example is given in (16).

- \*Yankirri Ø-rna nya-ngu ngarka-ngku (16)  
 pantu-nyja-kurra.  
 emu(ABS) AUX-1SG see-PAST man-ERG  
 spear-INF-while  
 'I saw the emu<sub>1</sub> while the man speared \_\_\_\_<sub>1</sub>.'

It is impossible for the omitted argument in the dependent clause to be interpreted as the undergoer, in sharp contrast to (7e) in English, and therefore the

restricted neutralization in Warlpiri is limited to intransitive verbs. The facts in (14–16) are representative for the language as a whole. The situation in Acehnese, English, and Warlpiri is summarized in Table 2. Even though grammatical relations can be motivated in both English and Warlpiri, the restricted neutralizations defining them are not the same: in English the neutralization applies to the arguments of both transitive and intransitive verbs, whereas in Warlpiri it is only with intransitive verbs. Thus subject in Warlpiri cannot be considered to be exactly the same as subject in English, and therefore the weaker sense of universality is also insupportable. It must be emphasized that the reason for this contrast is not due to the fact that Warlpiri has ergative morphology and English accusative; Dyirbal, another Australian language (Dixon 1972), has both ergative morphology and syntax, and yet with respect to these criteria it patterns like English, not Warlpiri, in that it exhibits restricted neutralizations with both intransitive and transitive verbs. While this discussion has focused on just these three languages, many examples of English-type and Warlpiri-type languages could be adduced (see Foley and Van Valin 1985; Van Valin 1993). It appears, then, that grammatical relations are not universal in either sense.

Table 2. Restricted neutralization of semantic roles

	Intransitive <i>V<sub>s</sub></i>	Transitive <i>V<sub>s</sub></i>	Grammatical Relations
Acehnese	NO	NO	NO
English	YES	YES	YES
Warlpiri	YES	NO	YES

### 3.3 Types of Systems of Grammatical Relations

Systems of syntactic relations vary along three primary dimensions: the pattern of the relations, the factors affecting the relations, and the consistency of the relations. Each of these will be discussed below.

The pattern of grammatical relations refers to the contrast between languages with accusative syntax and those with ergative syntax. In characterizing ergativity, it is useful to distinguish what Andrews (1985) calls 'grammatical functions' from grammatical relations. Dixon (1972) proposes that there are three grammatical functions: 'S,' the single argument of an intransitive verb; 'A,' the actor of a transitive verb; and 'O,' the object of a transitive verb. Grammatical relations are constituted of combinations of the functions. In English, the grammatical relation 'subject' includes both S and A, while the 'direct object' encompasses only O. This is clear from the facts in (7): S and A are treated alike, as in (7a, b, c), while O is excluded from the construction, as (7d) shows. In order for an undergoer of a transitive verb (which is normally realized as the O) to be raised in this construction, it must function as the derived

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intransitive subject of a passive verb; this grammatical function will be labeled 'd-S.' This pattern (subject = [S, A, d-S], object = [O]) defines an 'accusative' pattern. The name comes from the case marking pattern in languages like German in which S and A receive nominative (unmarked) case and O receives accusative (marked) case. In an ergative language, the grouping of functions is different, at least for some grammatical phenomena. With respect to case marking, S and O are assigned absolutive (unmarked) case, while A receives ergative (marked) case. There are also syntactic phenomena in some ergative languages, e.g., Dyirbal (Dixon 1972), Sama (Walton 1986), and Jacalteco (Craig 1977), which treat S, O, and d-S the same and exclude A, e.g., relativization. Thus in a morphologically ergative language, case marking groups S and O together and treats A differently, and in a syntactically ergative language, the restricted neutralizations treat S, O, and d-S the same and A differently. These two patterns can be represented as in Fig. 3.



Figure 3.

This difference in patterns of grammatical relations is relevant to the issue of universality. If [S, A, d-S] defines the traditional notion of subject found in English and many other languages, what is the grammatical relation defined by [S, O, d-S]? If [O] is the traditional notion of direct object, what grammatical relation is [A]? The decomposition of grammatical relations into grammatical functions also permits a restatement of the contrast presented in Table 2, as in (17).

- |                                   |      |
|-----------------------------------|------|
| (a) English subject [S, A, d-S]   | (17) |
| (b) Warlpiri subject [S, A]       |      |
| (c) Dyirbal 'subject' [S, O, d-S] |      |

Both English and Dyirbal have restricted neutralizations with both intransitive and transitive verbs, hence the d-S component of subject, which Warlpiri lacks. Thus even though the syntactic pattern in English and Warlpiri is accusative, the notion of subject is not the same in the two languages. And even though Dyirbal and Warlpiri are both morphologically ergative, they differ syntactically both in terms of pattern and types of restricted neutralizations. There are, therefore, three distinct notions of syntactic subject operative in the grammatical systems of these three languages. The most common types of

subject universally are [S, A] and [S, A, d-S], and no language uses [S, O] as its exclusive or primary syntactic relation (see Van Valin and LaPolla 1997 for detailed discussion).

The second parameter of variation among grammatical systems is the factors affecting the relations. By this is meant the factors, syntactic, semantic, or pragmatic, which affect the determination of which argument of a verb will bear which grammatical relation. That is, given the set of the matic relations associated with a multiple-argument verb, there is, in some languages, more than one possible morphosyntactic realization of these arguments. With a transitive verb in Warlpiri and the North American Siouan language Lakhota (Van Valin 1977), for example, there is no variation as to which argument will be subject and which will be object: the actor is always subject, and the undergoer is always object. In these languages the lexical semantic properties of the verb determine how the arguments will be realized; there is no variation. With a transitive verb in English and Dyirbal, on the other hand, either the actor or the undergoer may function as subject; what conditions this choice? The fact that both roles are possible shows that the choice is not strictly semantically conditioned, as in Warlpiri and Lakhota. A major factor affecting the selection of the argument to function as subject is the pragmatic status of the argument in the discourse. It has long been noted that there is a correlation between subjecthood and topicality, and in some languages the relative topicality of arguments affects subject choice: the most topical argument will be realized as subject, *ceteris paribus*. An analysis of subject selection in texts provides strong evidence of discourse influences on subject selection (see Van Valin 1993 and Van Valin and LaPolla 1997). Thus, pragmatic relations of the kind discussed in Sect. 1 play a significant role in the grammar of some languages, and in these languages subject can be viewed as a grammaticalization of the discourse relation of topic within the clause. It is important to emphasize that while subjects appear to be highly topical in all languages that have grammatical relations, pragmatic factors influence subject selection in only some languages, e.g., English and Dyirbal. Hence in some languages grammatical relations represent an interaction between all three types of functional relations, and in these languages grammatical relations cannot be considered purely syntactic.

The final dimension of variation is the consistency of the relations defined by restricted neutralizations. In all of the languages discussed to this point the major constructions in the language all involve basically the same restricted neutralization. When one talks about the notion of subject in English, what is meant is that the restricted neutralization found in (7) is found in all of the major



constructions in the language. Grammatical relations are thus generalizations across the consistent restricted neutralizations found in a language, and therefore consistency is a crucial feature of these relations. Not all languages have consistent systems of grammatical relations. A very extreme example of an inconsistent or split system can be found in Jacaltec, a Mayan language (Craig 1977). Table 3, taken from Van Valin (1981), summarizes the pattern of neutralizations in seven major grammatical constructions. The inconsistency here is indeed striking: there are *five* distinct patterns in only seven constructions. It is not at all clear what 'subject in Jacaltec' in the traditional sense could mean, other than S, the only common denominator in all seven constructions. Thus while most languages are like English, Dyirbal, and Warlpiri in having a relatively consistent system of grammatical relations, there are languages such as Jacaltec in which there does not appear to be a set of syntactic relations which applies consistently through their grammar.

Table 3.

Construction	Pattern
1. 'Subject'[S, A]-triggered equi-NP-deletion	[S] only
2. 'Object'[O]-triggered equi-NP-deletion	[S, d-S(passive)] only
3. Promotion ('subject' copying with verbs like <i>begin</i> )	Dialect 1: [S] only Dialect 2: [S, d-S(both)] only
4. Relativization	[S, O, d-S(antipassive)]
5. wh-question formation	[S, O, d-S(antipassive)]
6. Clefting	[S, O, d-S(antipassive)]
7. Cross-clause coreference (preferred)	[S, A, d-S(passive)]

### 3.4 Implications for Syntactic Theories

As noted at the beginning of Sect. 3, grammatical relations are treated differently in different syntactic theories. They play only an indirect role in GB; while reference is often made to subject, it is always interpreted in a strictly structural way, i.e., as the NP which is SPEC of IP or the 'external argument' of the verb. This approach crucially assumes that subject can be given the same structural definition in every language, and this is problematic. It would be possible to claim that in a syntactically ergative language like Dyirbal or Sama S and O are the external argument and A is the VP-internal argument, but phenomena like those in Jacaltec potentially pose a serious problem, since in some constructions S and O would be the external argument, in others the S alone would be external, and in yet others S and A would appear to be the external argument.

Theories like LFG and RelG which take traditional English-like grammatical relations as basic run into greater difficulties. The non-universality of

grammatical relations in both senses is a significant problem. The existence of languages like Acehnese which lack grammatical relations is an obvious difficulty; this would appear to pose a severe challenge to the descriptive adequacy of the theories. RelG nevertheless proposes grammatical-relations-based analyses of the language (e.g., Perlmutter 1982), while no analysis of these phenomena has yet been proposed in LFG. The variation in grammatical relations across languages is also problematic. In RelG this has been dealt with in terms of grammatical relations at different strata in a derivation, e.g., initial versus final grammatical relations, and combinations thereof, e.g., 'working 1' = an argument which is a subject (1) in the initial stratum and a term in the final stratum (Perlmutter 1982). Finally, both theories assume consistent systems of relations, and split systems like Jacaltec present another challenge. RelG approaches split systems the same way as it deals with cross-linguistic variation, namely, with formulations based on grammatical relations at different levels in a derivation and combinations thereof. An LFG account of these phenomena remains to be developed.

RRG takes a radically different approach to these problems: it rejects traditional grammatical relations as theoretical constructs, and instead proposes only a single syntactic relation, which it terms 'the privileged syntactic argument of a construction.' Privileged syntactic argument is a construction-specific notion, and it is a construction-specific notion, and it is defined by a restricted neutralization of the type discussed above. There are two types of privileged syntactic arguments: controller, which are the triggers for agreement, antecedents for reflexives and the controllers of missing arguments in complex constructions, and pivots, which are the missing argument in a control of conjunction reduction construction or the raised element in a construction like (7). Thus RRG views grammatical relations systems as being composed of pivots and controllers; languages which have the same privileged syntactic argument for all or most major grammatical constructions have what appears to be the traditional system of grammatical relations, but this is a derived rather than basic concept. Languages with ergative or split syntactic systems pose no particular challenge, because there is no assumption that the [S, A, d-S] accusative pivots and controllers of English is in any way the unmarked privileged syntactic argument universally or that a language must have the same one for every construction. Languages like Acehnese simply lack syntactic pivots and controllers and grammatical constructions are characterized directly in terms of semantic functional relations. RRG integrates pragmatic relations in such a way that in languages like English and Dyirbal their influence on the determination of the privileged syntactic argument is a construction can be captured.

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## Gender and Gender Systems

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Gender is a fascinating category, which shows great variety in several respects. If its distribution in the world's languages is reviewed, families like Indo-European and Dravidian are revealed where gender is widespread, and others like Uralic where it is absent. In languages which have gender, it may be central, forming an essential part of the lexical, syntactic, and morphological structure (as in German), or it may be more peripheral (as in English). Even the number of genders varies considerably: two and three genders are found commonly, four and five are not unusual, while Fula (a Niger-Kordofanian language) has around twenty, depending on the dialect. Gender systems may have sex as a component, as in languages with masculine and feminine genders: but equally sex may be irrelevant, as in the Algonquian languages where the distinction is between animate and inanimate. The defining characteristic of gender is agreement. There is no substantive difference between 'genders' and 'noun classes'; the different terms are merely the products of different linguistic traditions. (For fuller information and extensive references see Corbett 1991.)

### 1. Gender Systems

Definitions have been a problem in the study of gender. To demonstrate the existence of a gender system evidence is required from agreement, that is, evidence outside the noun itself. The most successful approach to the definition problem is that based on Zaliznjak's (1964) notion of 'agreement class.' The basic idea is that two nouns are in the same agreement class only if they take the same agreements under all conditions. If two nouns belong to two different agreement classes it will normally be the case that they belong to two different genders; but there are complications here. To take a concrete example the nouns of French can be divided into two sets according to the agreements they take (1-2):

un grand garçon (1)  
a big boy

une grande femme (2)  
a big woman

The form of the article and of the adjective has to change to agree with the particular noun. There are many thousands of nouns like *garçon* in (1); many of them denote male humans and so the gender which they form is called the 'masculine gender.' However, there are also many nouns, like *camion* 'lorry,' which denote inanimates but which take the same agreements as *garçon*, and so are also members of the masculine gender. Similarly, there are many thousands of nouns

like *femme* 'woman,' some denoting females and some not, which make up the 'feminine gender.'

#### 1.1. Controller and Target Genders

French is straightforward in that the nouns divide into two genders, and there are two sets of agreeing markers, on adjectives and other agreement targets, which mirror the division of nouns. But there are languages where the situation is more complex. Romanian, for example, has a masculine and a feminine gender similar to that of French. But there is a third, substantial set of nouns which when singular take the same agreements as the masculines, but when plural take the same agreements as the feminines. Clearly these do not belong in the same agreement class as either of the other two, and they form a third gender (sometimes called 'neuter,' sometimes 'ambigeneric'). There is no third set of agreement markers. This shows the need to make a distinction between the genders into which nouns are divided, the 'controller genders,' and the number of distinctions made by agreement targets, the 'target genders.' These may correspond, as in French, where there are two controller genders, and two target genders. But sometimes they do not correspond, as in Romanian; here there are three controller genders but only two target genders.

#### 1.2 The Relation of Gender to Number

This evidence shows the need to investigate the relationship between gender and the related category of number. In French the situation is straightforward, and may be represented as in Fig. 1. A noun which takes masculine agreements in the singular will take masculine agreements in the plural. Systems like this are termed 'parallel': a parallel system is one in which gender in one number determines gender in the other and vice versa.

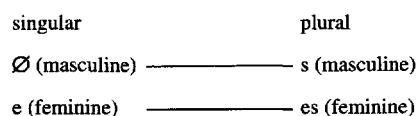


Figure 1. The gender pattern of French.

The next type can be illustrated by the northeast Caucasian language Archi (Fig. 2). If one takes the (prefixal) agreement markers (from Kibrik 1972), the pattern shown in Fig. 2 is revealed. In the centre there are the agreement markers. These are given again on the right in a notation which recognizes the identities of form. The lines joining the agreement markers represent classes of nouns, and these are labeled with

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		singular	plural	singular	plural	ovog	studenta	
I	dya (father)	w	b	w	I	this	student	(3)
					II			
					b			
II	buwa (mother)	d	b	d		ovaj	zakon	(4)
						this	law	
III	dog (donkey)	b	Ø	b	III			
					IV			
					Ø			
IV	motol (kid)	Ø	Ø	Ø				

Figure 2. The gender pattern of Archi.

Roman numerals. Archi illustrates a 'convergent' system, that is, one in which gender in one number determines gender in the other but not vice versa.

The most complex type is the 'crossed' type. A crossed system is one in which gender in neither number determines gender in the other (Fig. 3). It is systems of this type which make it important to distinguish the notions of controller and target gender.

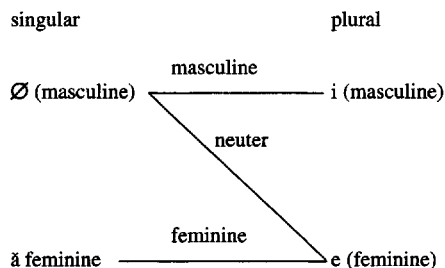


Figure 3. The gender pattern of Romanian.

As the Archi data show (Fig. 2), the number of forms distinguished in one number may be different from that in the other (four in the singular and two in the plural in Archi). Greenberg's universal number 37 states that: 'A language never has more gender categories in nonsingular numbers than in the singular' (1963: 112). This must be seen as referring to target genders.

### 1.3 Subgenders

An interesting complication to gender systems, and a possible means of expanding the inventory of genders in a given language, is provided by 'subgenders.' The South Slavonic language Serbo-Croatian has three genders, masculine, feminine, and neuter, which are very clearly distinguished by the agreement of adjectives, participles, pronouns, and other agreement targets. Within the masculine gender, however, in the accusative case only (the other six cases are not affected), the following distinction is found (3-4):

The nouns which behave like *student* in (3), when in the accusative case (*studenta*), take the same agreement as they would when in the genitive case. Nouns of this type denote animates. Nouns like *zakon* 'law,' on the other hand, take agreements as though they were in the nominative case; such nouns denote inanimates. It follows that *student* and *zakon* are in different agreement classes. But it appears counter-intuitive to recognize a new gender here, since their agreements are identical except for the accusative singular. Rather it can be said that the masculine gender is divided into two subgenders, the masculine animate and the masculine inanimate. Subgenders, then, are agreement classes which control minimally different sets of agreements.

## 2. Gender Assignment

It is evident how genders are established from the linguist's analytic point of view. The other side of the question is the way in which nouns are distributed over the genders of a given language. Clearly the speaker must know the gender of a noun in order to produce examples like (1) and (2) above. It is often stated that there is no principle involved here, that gender is simply remembered for each noun. But there are mechanisms by which nouns are allotted to genders, as suggested by the great regularities found and by the way in which borrowings are given a gender (as indeed are invented words in psycholinguistic experiments). Models of the native speaker's ability are called 'assignment systems.' Assignment may involve two sorts of information about the noun: its meaning and its form.

### 2.1 Semantic Systems

In some languages meaning alone is sufficient to determine gender. For example, in Tamil (a Dravidian language of southern India and Sri Lanka), nouns denoting gods and male humans are masculine, those denoting goddesses and female humans are feminine, and all others are neuter. And equally, any noun which is masculine will denote a male human or a god. Some other Dravidian languages like Kolami have only two genders: nouns denoting male humans are masculine and all others fall into the nonmasculine gender. This situation may be reversed. In Diyari, a language of South Australia, there are again two genders: one is for nouns with female referents (such as women, girls, doe kangaroos), and the other is for all remaining nouns. And in Dizi, an Omotic language of southwest Ethiopia, there is one gender for nouns denoting females (humans and animals), and for diminutives; all remaining nouns are in



the second (masculine) gender. In Alamlak, a Sepik Hill language of Papua New Guinea, the masculine gender includes nouns denoting males and those denoting things like crocodiles, pythons, and arrows, which are long and thin, while the feminine is for nouns denoting females or short, squat items like turtles, frogs, and chairs.

The semantic criteria by which nouns are assigned to genders may be less straightforward. Thus Dyirbal, a language of North Queensland, Australia, has four genders, primarily for:

- (a) male humans and nonhuman animates;
- (b) female humans;
- (c) nonflesh food;
- (d) others.

There are many apparent exceptions. For example, the moon is in the first, masculine gender and the sun is in the second, feminine gender. The reason is that in Dyirbal mythology, as indeed in much of Australia, the moon is the husband of the sun; in Dyirbal the role in mythology determines gender (see Dixon 1972). Worldview also plays a part in Ojibwa (an Algonquian language of southern Canada and the northern USA). Here, as in other Algonquian languages, there are two genders: animate and inanimate. The first includes nouns denoting persons, animals, spirits, and trees. But it also contains some surprises, such as the nouns for 'sacred story,' 'star,' 'pipe' (for smoking), and so on. It has been suggested that the animate nouns are in fact nouns denoting objects which in the worldview of the Ojibwa are sources or carriers of power.

These then were all languages in which the meaning of the noun determines gender. In some cases the assignment rules are immediately obvious, in others they require an understanding of the cultural setting of the language. Some assignment rules are practically exceptionless; others allow numbers of exceptions, though still accounting for the vast majority of nouns.

It is worth considering the criteria on which semantic systems can be based. Quite often one finds animate-inanimate, human-nonhuman, and male-female. Sometimes there is a gender for diminutives, as in various Bantu languages. There are also less usual genders, such as that for nonflesh food (Dyirbal), and the gender for insects (found in the Rikvani dialect of the northeast Caucasian language Andi). A criterion which defines a gender in one language may be just one factor in the assignment to a gender in another. Thus the Bantu language, Chichewa, has a gender for diminutives, while in Dizi, diminutives together with nouns denoting females form a gender.

## 2.2 Formal Systems

Although in many languages semantic information about nouns is all that is required for assignment, in many others this is not the case. In such languages information about form is also required. However,

while there are purely semantic systems, there are no purely formal systems. That is to say, semantic criteria are used in every gender assignment system; in formal systems, semantic information is insufficient on its own and has to be supplemented by information about form. For example, in Russian, as in many other Indo-European languages, nouns denoting male humans are masculine and those denoting female humans are feminine. Unlike the situation in Tamil, however, it is not the case that the remaining nouns are all found in the neuter gender: they are shared between the three genders. Searching for additional semantic criteria is not at all promising, as the type of data in Table 1 suggest.

Table 1. Examples of nouns of the three genders in Russian.

<i>žurnal</i>	magazine	<i>gazeta</i>	newspaper	<i>pis'mo</i>	letter
<i>avtomobil'</i>	car		car	<i>taksi</i>	taxi
<i>flag</i>	flag	<i>èmbrema</i>	emblem	<i>znamja</i>	banner
<i>zakon</i>	law	<i>glsnost'</i>	openness	<i>doverie</i>	trust
masculine		feminine		neuter	

There are formal characteristics of such nouns, however, which provide sufficient evidence for assignment. The native speaker of Russian must store information on how nouns decline (for six cases, singular, and plural). There are four major declensional patterns: (a) nouns like *zakon* 'law'; (b) nouns like *gazeta* 'newspaper'; (c) those like *glasnost* 'openness,' and (d) those like *pis'mo* 'letter.' Nouns which inflect according to the first paradigm are masculine, those belonging to the second and third paradigms are feminine, those in the fourth are neuter. There is a small subparadigm including nouns like *znamja* 'banner,' which are neuter. Substantial numbers of nouns are indeclinable, like *taksi* 'taxi'; these are neuter, unless they denote animates (*gnu* 'gnu' is animate and so masculine), or are acronyms (*MGU* 'Moscow State University' is masculine since the head word *universitet* 'university' is masculine—because when used independently it declines according to the first paradigm). Thus on the basis of formal information, which the native speaker must store in any case, the gender of a noun can be established by a relatively simple algorithm.

It might be thought that in such a language there is no need for semantic assignment rules. *Brat* 'brother' inflects according to the first paradigm and so would be masculine in any case; equally, *sestra* 'sister' belongs to the second, and so would be feminine. However, there are several examples in which meaning and form conflict. Thus *djadja* 'uncle' declines according to the second pattern (which would lead us to expect it to be feminine), even though it denotes a male person. In such cases the semantic assignment rules take precedence over the formal assignment rules and these nouns are masculine. Many examples of assignment

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being based on morphological (formal) information as well as semantic can be found in other Indo-European languages, and a similar system is found in Bantu languages.

The second possibility for formal gender assignment is that gender is determined by meaning and, when that fails, by the sound shape or phonology of the noun. This system is found in various languages around the world; a particularly interesting example is Qafar, a Cushitic language of northeast Ethiopia and Djibouti. The semantic rule in Qafar is straightforward: nouns denoting males are masculine; those denoting females are feminine. Thus *bāqla* 'husband' is masculine while *barrā* 'wife' is feminine. For nouns which do not denote sex-differentiables there is a simple rule. Nouns ending in a vowel which can potentially bear high tone (marked) are feminine: for example, *karmā* 'autumn.' All others are masculine: *gilāl* 'winter' ends in a consonant and so is masculine, while *baānta* 'trumpet' ends in a vowel but not one which can bear high tone, and so is also masculine. Here too semantic and formal criteria may be in conflict: *abbā* 'father' would be predicted to be feminine according to its form, but semantic assignment takes precedence and it is masculine.

Qafar is a particularly clear example of assignment depending on phonological information; other examples can be found in various parts of the world. Surprisingly, perhaps. French has been shown to have a phonological system, depending on the final phones of the noun, though it is much more complex than that of Qafar. For example, of 938 nouns ending in *ē*, 99 percent are masculine (like *le pain* [pē] 'the bread'), and of 1,453 nouns in /*3*/, 94.2 percent are masculine (like *le ménage* [mena:3] 'the household') (for more details see Tucker, et al. 1977).

The different types of assignment criteria may overlap in ways which make it difficult to establish their relative weight in a given language. Thus there may be small clusters of nouns which can be accounted for by semantic criteria (apart from those covered by the main semantic rules) even within systems where formal rules have a major role (as shown for German by Zubin and Köpcke 1986).

Gender assignment is essentially systematic in all languages. The main evidence for this view is the great predictive power of the rules described above, which the considerable regularities found in the primary linguistic data. Supporting evidence comes from two other sources. Languages frequently borrow new words from other languages. This process serves as a continuously running experiment, which shows that borrowed nouns take their gender according to the proposed assignment rules. For example, in Tamil, the borrowed word *daaktar* 'doctor' is masculine or feminine, depending on the sex of the referent, while *kaarū* 'car' is neuter. It is also possible to construct words which do not actually exist. Their gender is

predicted by the assignment rules and so their validity can be tested. Thus Tucker, et al. (1977), found that speakers of French assigned invented words to the gender predicted by the assignment rules with significant consistency. For recent work on gender assignment see Evans, et al. (1998) and references there.

### 3. Double Gender, Multiple Gender, and Hybrid Nouns

There are some nouns which appear to belong fully to two or more different genders, that is, they can take all the agreement appropriate for more than one gender. For example, the noun *lo* 'child' in Archi can take gender (I) agreements (as for male persons), when a young boy is denoted, gender (II) (as for female humans) for a girl, and gender (IV) (when singular only, gender (IV) being primarily for inanimates), when the sex of the referent is unknown or unimportant. While *lo* seems to belong to more than one gender (some would call it a noun of 'common gender'), this is a reflection of a difference in meaning (so that the assignment is fully regular according to the normal rules of Archi). It could be said therefore that there are three closely related lexical items. Examples of alternative genders where there is no associated change in meaning are harder to find. When particular nouns do not fall unambiguously under a single assignment rule, perhaps because the relative importance of different assignment rules is changing, or else because they are borrowings which do not conform to some aspect of the native lexis, they may have two (or more) genders. But even here the two are rarely equivalent. One may be stylistically marked as archaic or innovatory.

One class of nouns deserves special attention. These take the agreements of more than one gender, but they do not simply take all the agreements of these genders. The actual agreement they take depends on the particular type of target. Thus the Russian noun *vrač* when used to mean 'female doctor' may take masculine or feminine agreements. Attributive modifiers are more commonly masculine: for example, *naš* (MASC) *vrač* 'our doctor.' Predicate agreement can be masculine or feminine, the latter being the more likely: *vrač prišla* (FEM) 'the doctor came.' Pronouns are more likely still to be feminine. This is in accord with the constraint of the Agreement Hierarchy. The hierarchy consists of four positions: attributive modifier, predicate, relative pronoun, and personal pronoun. It requires that for a given controller, as one moves rightwards along the hierarchy, so the likelihood of semantically justified agreement (feminine in the case of *vrač*) will increase monotonically.

Nouns of this type, which belong to more than one gender, but not fully to both, are termed 'hybrid nouns.' They arise when two assignment rules are in conflict and when this conflict is not, as in the normal case, unambiguously settled in favor of one of them.

In the specific case of *vrač* there is a conflict between semantic assignment (feminine), and morphological assignment (masculine). The semantic assignment rule is not completely dominant in this case because of the interference of the use of *vrač* in its other meanings ('male doctor' or 'doctor of unknown sex'), when it is masculine.

#### 4. Gender Resolution

This term was coined by Givón (1970) and it refers to a rule which specifies the form of an agreeing element (or target) when the controller consists of conjoined noun phrases. Resolution is generally not obligatory; instead agreement may be with one conjunct only. In such cases, resolution is not involved and examples of this type are not considered here. There are different types of gender resolution: some languages have rules which are basically semantic, others rely on a syntactic principle, while yet others show interesting combinations of the two.

##### 4.1 Semantic Gender Resolution

Gender resolution by the semantic principle involves reference to the meaning of the conjoined elements even if this implies disregard for their syntactic gender. Examples can be found in Bantu languages. These usually have several genders, which correspond to semantic classifications only partially: nouns of the 1/2 gender are human, but not all nouns denoting humans belong to the 1/2 gender (Bantuists use labels such as 1/2 to indicate the agreements taken for singular and plural—a clear way of specifying the agreement class). For gender resolution, the important thing is whether a noun denotes a human or a nonhuman, irrespective of its gender. This point is illustrated in data from Luganda. The resolved form for conjoined noun phrases headed by nouns denoting humans is the class 2 marker—the one used for agreement with plural nouns of the 1/2 gender. In (5) none of the conjuncts belongs to the 1/2 gender, but as all denote humans the resolved form is the class 2 marker:

ek-kazi,	aka-ana	ne	olu-sajja	(5)
ba-alabwa				
5-fat.woman	12-small.child	and	11-tall.man	
2-were.seen				
'the fat woman,	the small child	and	the tall man	
were seen'				

Clearly the use of the class 2 form as the resolved form is motivated by semantic considerations. If none of the conjuncts denotes a human, then the class 8 form is used, as in (6):

en-te,	omu-su,	eki-be	ne	elv-ato	(6)
	bi-alabwa				
9-cow	3-wild.cat	7-jackal	and	5-canoe	
8-were.seen					
'the cow,	the wild cat,	the jackal	and	the canoe	
were seen'					

Conjoining nouns denoting a human and a non-human produces an unnatural result; the preferred alternative is the comitative construction. A similar situation obtains in several other Bantu languages, but there may be complications (see, for example, the analysis of Chichewa by Corbett and Mtenje 1987).

##### 4.2 Syntactic Gender Resolution

Gender resolution according to the syntactic principle means that the gender of the nouns involved is what counts, rather than their meaning. In French if conjoined noun phrases are headed by nouns of the same gender then that gender will be used. When the conjuncts are headed by a mix of masculine and feminine nouns, then the masculine form is used (7):

un père	et	une mère	excellent-s	(7)
a father.MASC	and	a mother.FEM	excellent-MASC.PL	
'an excellent				
father and mother'				

un savoir	et	une adresse	merveilleux	(8)
a knowledge.MASC	and	a skill.FEM	marvellous.MASC.PL	
'a marvellous				
knowledge and skill'				

Here the rules apply with the same effect to animate (7) and inanimate nouns (8). The rules are evidently of the syntactic type. Languages with resolution rules like those of French are common; they include Spanish, Latvian, Hindi, Panjabi, and modern Hebrew.

##### 4.3 Mixed Semantic and Syntactic Gender Resolution

The semantic and the syntactic principles of gender resolution coexist in Latin. When resolution occurs in Latin, conjuncts of the same syntactic gender take agreeing forms of that gender. This is resolution by straightforward syntactic rules and need not be illustrated. However, when conjuncts are of different genders, then the resolved form to be used depends on whether the nouns denote persons or not. For persons the masculine is used:

quam pridem	pater	mihi	et	mater	(9)
how long.ago	father.MASC	me.DAT	and	mother.FEM	
mortu-i	essent				
dead-MASC.PL	were				
'how long ago					
my father and mother had died'					

For other conjoined elements the neuter is used:

murus	et	porta	de	caelo	tact-a	(10)
	erant					
wall.MASC	and	gate.FEM	from	sky	struck-NEUT.PL	
were						
'the wall and the gate						
have been struck by lightning'						

These examples are from Kühner and Stegmann (1955: 44–52). Thus Latin shows both semantic and syntactic principles at work.

#### 5. Diachrony

##### 5.1 Origins

The origin of gender systems has long fascinated linguists. Unfortunately, most investigators were

concerned with the Indo-European gender system, whose origins lie so far back that much work has been largely speculative. Languages whose gender systems are of more recent date allow a clearer view of how gender develops. The ultimate source of gender systems is nouns, and in particular those with classificatory possibilities such as 'woman,' 'man.' Such nouns may develop into classifiers (see *Classifier Languages*), that is, forms which may or must occur with ordinary nouns either in specific constructions, or more generally. It is known that this development occurs, because classifiers exist which are identifiable as nouns. Thus in the Meso-American language Jacaltec (Craig 1986), *ix* is the noun for 'woman' and is also the classifier for female non-kin. 'The woman' is *ix ix*, with the classifier followed by the noun. Jacaltec shows the next stage of development in that *ix* can also be used anaphorically, meaning 'she.' Once there are gender-distinguishing pronouns, gender can spread through the syntax, since anaphoric pronouns are well-attested as a source of agreement systems (as seen clearly in Bantu languages; see *Agreement*). Classifiers can also give rise to gender systems more directly by attaching themselves to various elements within the noun phrase, as has happened in the Daly languages of northwest Australia. For example, in Miritabin the classifier (originally a noun) occurs with adjectives as well as nouns. *Yeli* is the classifier for sticks, as in the phrase *yeli-meltem yeli-yikin* 'CLASSIFIER + digging-stick CLASSIFIER + my,' that is, 'my digging-stick.' Elsewhere in the Daly family, the form of the prefixed element varies according to the item it attaches to; this is clearly a gender agreement system (see Greenberg 1978, Reid 1997).

### 5.2 Development

Gender systems may expand by adding new genders, using existing morphological material. Various north-east Caucasian languages have gained one or more additional genders using new singular-plural pairings of agreements (part of the system has changed from being like that of French in Fig. 1 to that of Romanian in Fig. 3, Sect. 1.2). The agreement markers were already available but the pairing was new.

Changes in gender systems need not affect the number of genders; instead the composition of the genders may change. At the lowest level the change may affect a single noun. For example, if a language has a gender for nouns denoting humans and another for diminutives then the noun for a child, a small human, may move from one gender to the other (or may stay in between as a hybrid noun) or else a small anomalous group may change gender. But small numbers of nouns may lead to dramatic changes in the gender system. Thus the human gender of Bantu has been invaded by nouns denoting nonhuman animates to different degrees in different languages; in some, like Lunda, the change is complete and the previous

human gender is now an animate gender. Such changes affect the different agreement targets in turn, but the result is that the assignment rules change without any great effect on the gender agreement forms.

### 5.3 Decline

The major cause of the decline of gender systems is attrition, that is, the partial or complete loss of the formal markers on which the system depends. Its effects can be seen clearly in modern French. The loss of final *-e*, the marker of feminine gender, has left gender agreement in a confused state in the spoken language, with some targets marking gender by the presence or absence of various final consonants and many targets not marking gender at all. The effect of the same change on nouns has been to make the assignment rules complex, as is evident when French is compared with other Romance languages like Spanish.

In some cases phonological change can lead more directly to a decline in the gender system, when two previously distinct gender agreement markers coalesce. In such cases, all nouns in the corresponding controller are likely to be affected equally. But a different type of change is possible, in which nouns 'transfer their allegiance' by changing from using one target gender form to another. A change of this type with gradual transfer of nouns from one gender to another may lead to the loss of a controller gender. If no other controller gender takes the target form involved, then that target form will disappear too.

It is not unusual for a gender to be lost completely. Many members of the Indo-European family have reduced its three genders to two. In Romance languages, like French, the masculine and neuter have combined. In various Slavonic languages there is considerable pressure on the neuter gender and in the Sele Fara dialect of Slovene, the neuter has already been lost (since 1945), with most neuter nouns joining the masculine (Priestly 1983: 353–55).

The loss of a gender may well make the assignment system for the remaining genders less clear in terms of semantics. Specifically, the rule assigning nouns denoting males to the masculine gender accounted for a smaller proportion of the masculine nouns in the Sele Fara dialect after the neuters had joined the masculine. This helps resolve a difficult problem. The rise of gender depends on a semantic classification. There is then the question as to why gender systems should be anything but semantic. As has been just noted, however, the fusion of genders may blur an earlier distinction. This then is a first mechanism which can lead to the weakening of semantic systems; there are several others. A second point is that the semantic criteria cannot be absolutely clear-cut. If the division is human/nonhuman where do gods fit in? And what if gods are represented as animals or inanimates? These are potential triggers of change. A third, related



mechanism depends on changes in the worldview of the speaker. While the assignment of nouns to the given gender may have been fully explicable according to a previous worldview of the speaker, when this changes, numerous nouns are left stranded with their gender no longer predictable from their meaning. The fourth mechanism is based on cross-classification. Some languages have size—large/small—as a semantic criterion. Such relative criteria invite problems in any case, but particularly since they can cross-clarify with other criteria. Thus a child could be classified as small or human. The examples available show that even one or two problem nouns of this type can lead to widespread change, but it is difficult to say when they will do so and when instead they will simply remain as isolated hybrid nouns. A final but important factor is derivational morphology. If there is a derivational affix with a particular meaning, which is therefore also tied to a particular gender, and this affix extend its meaning, then this may affect the distribution of nouns. For example, an affix with the meaning 'agent,' whose derivatives were all in the human gender, might extend to cover implements and could lead to gender conflict.

It is also possible for all genders to be lost so that a genderless language results. In Indo-European, for example, most Iranian languages, like Persian, have lost gender as have many Indic languages, such as Bengali. In its decline, a gender system may leave its trace in different declensional types (perhaps marking only singular versus plural). Finally, there may only remain relatively small groups of nouns with a phonological similarity, which is the last remnant of a prefix or suffix, which in its day was a clear indicator of gender.

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## Genericity

M. Krifka

Sentences can express facts about particular events and objects. For example, with the sentence:

Alexander the Great saw bananas on his expedition (1) to India.

the *Encyclopedia Britannica* informs us about a particular event in which certain objects, including some bananas, took part. But sentences can also express more general facts that are not directly related to particulars:

## Genericity

- |   |     |  |
|---|-----|--|
| The banana was brought from the Canary Islands to the New World.  | (2) | it seems that not every predicate is related to a kind. Kinds have to be well-established entities with recurrent properties; for example, <i>the German shepherd</i> may denote a kind, whereas <i>the German mosquito</i> does not.  |
| Bananas are grown successfully under irrigation in such semiarid regions as the southern side of Jamaica. | (3) | Although inherently a nominal phenomenon, kind reference shows some effects on verbal predicates. A number of verbs, such as <i>be extinct</i> or <i>invent</i> , exhibit selectional restrictions on certain argument places, which can only be filled by kind-referring NPs. But in many cases ordinary predicates can be applied to kind-NPs, inducing a variety of possible interpretations. To mention but a few, the predicate can express a property that the specimens of a kind have collectively (e.g., <i>The American consumer devoured 1.3 trillion bananas last year</i> ), or a statistical average (e.g., <i>The middle-class American family owns 1.7 cars</i> ), or some characteristic trait (e.g., <i>The schnauzer makes a good watchdog</i> ). Example (2) presents a case where the property of some 'avantgarde specimen' is projected onto the kind itself. There are other cases where kind-referring NPs can be used although concrete specimens seem to be involved, e.g., <i>In Alaska we filmed the grizzly</i> . It is not very well understood under which conditions such sentences occur and how they should be described semantically.  |
| A banana contains vitamins A and C.   | (4) | 'Characterizing predications' on the other hand, have been analyzed as a form of quantification (cp. Heim 1982; Carlson 1989). Although the quantifier may be made explicit, e.g., by an adverbial like <i>usually</i> , an auxiliary construction like <i>used to</i> , a modal operator like <i>must</i> , or in many languages by specialized morphological verb forms usually called 'habitual,' the quantifier often remains unexpressed, as in (3–5). The generic quantifier is similar to other adverbial quantifiers, like <i>always</i> , insofar as it can quantify over events, as in (5), which expresses a quantification over eating events. If the verb of a generic sentence contains an event argument, it is always quantified over, and hence the sentence does not refer to a particular event anymore. This explains why generic sentences are always nonepisodic, or stative. However, the generic quantifier may also quantify over other types of variables that are given by NPs, including bare plural NPs as in (3), indefinite singular NPs as in (4), and indefinite NPs with number specification, as in <i>Five bananas yield enough vitamin A for a day</i> . The characteristic trait reading of sentences with kind-referring NPs mentioned above can be analyzed as characterizing predications over the specimens of a kind. |
| Woody eats bananas for breakfast.   | (5) | Similar to the now standard analysis of NP determiners as 'generalized quantifiers,' like <i>every</i> , the logical structure of the generic quantifier is that of a dyadic relation, in that it requires two semantic constituents, a 'restrictor' that defines the range of quantification, and a 'matrix,' also called 'scope' or  |

Although (2) refers to a particular event in the sixteenth century, it is clearly not about a particular banana, but about the kind *Musa* itself. Sentences (3–5) do not refer to particular events but rather express general rules. Sentences like (2–4), and sometimes also (5), are called 'generic,' and sentences like (5) are often called 'habitual.' Generic sentences seem to be much more important to scientific thought than nongeneric, or 'particular,' sentences and have, for that reason, been of central concern to philosophers since Aristotle (see, e.g., Ryle 1949 on dispositional predicates).

Generic sentences have also attracted the attention of linguists. The work of Carlson (1977a, 1977b), who proposed a unified theory of generic sentences within a formal semantic framework, has been particularly influential. According to that theory the essential property of generic sentences is that they express properties of individuals, which come in two flavors, namely 'kinds,' such as the kind *banana* (*Musa*), and 'objects,' like *Woody*, whereas nongeneric sentences involve only stages of individuals, that is, individuals localized in time and space.

In a recent survey (Krifka, et al. 1995) it is argued that two types of genericity have to be distinguished, namely 'kind reference,' as in (2), and 'characterizing predications,' as in (3–5).

'Kind reference' is the phenomenon that certain NPs may refer to a kind, a type of entity that differs from ordinary objects insofar as it is not restricted spatiotemporally. There is a wide variety of kind-referring NPs: NPs with a definite article, such as *the banana* (cp. (2)), bare NPs, i.e., bare plurals for count nouns and bare singulars for mass nouns as in *Bananas are healthy* or *Honey is sweet*, and specialized expressions such as *Man* in *Man inhabited America at least 35,000 years ago*. It is also the case that most nouns can be used to refer to subspecies of a kind, such as *bananas* in *Plantains differ from other bananas in that the ripe fruit is starchy rather than sweet*. This is called the 'taxonomic interpretation' of nouns.

Kinds are realized by ordinary objects as their specimens, but it may be that they lack specimens, as is the case with extinct kinds. This makes them similar to intensions, as in possible world semantics. However, whereas every predicate has an intension,

'nuclear scope.' Like all sentences with adverbial quantifiers, generic sentences can be ambiguous, since there may be different ways of partitioning the semantic material of a sentence into restrictor and matrix. For example, (5) can be read as (a) *Usually, when Woody eats breakfast, he eats bananas*, with *Woody eats breakfast* as restrictor, or as (b) *Usually, when Woody eats bananas, he eats them for breakfast*, with *Woody eats bananas* as restrictor. In such cases, the 'topic-comment modulation' plays an important role in disambiguation. For (5), reading (a) is preferred with accent on *bananas*, while (b) is preferred with accent on *for breakfast*. In general, constituents in comment or focus position belong to the matrix (cf. Rooth 1985 on focus and quantification). In other cases and other languages, the partition can be read off from syntactic structure. For example, *when*-clauses always belong to the restrictor, as has just been demonstrated with the paraphrases of (5). In German, word order plays an important role, as constituents belonging to the restrictor tend to precede those that do not. For example, the two readings of (5) can be rendered as, respectively, (a) *Woody ißt zum Frühstück Bananen* and (b) *Woody ißt Bananen zum Frühstück*. Spanish would distinguish between the two readings of (5) by using a definite article with *plátanos* ('bananas') in the (b) reading (*Woody come plátanos en el desayuno* versus *Woody come los plátanos en el desayuno*). French exhibits another interesting phenomenon as it has a special resumptive anaphoric element *ça* for NPs in the restrictor of a generic quantifier (e.g., *Les bananes, ça c'est nourrissant*, 'bananas are nutritious'). In languages with topic markers, like Japanese, NPs in the restrictor of the generic quantifier are typically marked as topics. The principles behind the marking of different generic readings are, however, not well understood. Topic-comment articulation as well as syntactic structure seem to play a role here (see also Diesing 1992).

One of the most vexing problems in the semantic description of generic sentences is capturing their truth-conditions. They clearly have the flavor of universal quantification. However, usual universal quantifiers are too strong to cover generic sentences, as generic sentences typically allow for exceptions. For example, even if Woody does without bananas on a few exceptional days, (5) may still be true in the (a) reading. It seems impossible to make the generic quantifier more precise, for example, by imposing a percentage, as in *in at least 90 percent of the cases*, since there are examples that show that such percentages may be too low (e.g., in *Cyanide causes immediate death*). On the other hand, universal quantification is too weak, as it may be true for accidental reasons, whereas characterizing sentences

express essential properties (cp. Lawler 1973; Dahl 1975). For example, a sentence like *Every member of this club is a teetotaler* is true if every member happens to be abstinent, but a sentence like *Members of this club are teetotalers* is likely to be false when to be abstinent is not a condition for becoming a member of the club in question.

Various theories have been proposed to grasp the nature of the generic quantifier (see Krifka, et al. 1995 for a survey). For example, it has been suggested that characterizing sentences make a claim only for prototypical members of a certain class (Heyer 1985), or that they are related to certain stereotypes and hence do not make any truth-conditional claim about the world (Putnam 1975). Within possible world semantics, the generic quantifier has been analyzed as a modal operator that essentially quantifies over individuals in worlds that are close to an ideal (Lewis 1973; Kratzer 1981). In artificial intelligence, generic sentences are often used to illustrate default inferences, that is, logical conclusions that can be drawn because of lack of evidence to the contrary.

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## Grammatical Units

R. E. Longacre

The structure of a language is essentially threefold: (a) its sound structure, commonly called phonology; (b) its lexical structure, as seen in its dictionary items, its synonyms, antonyms, and items from the same or different semantic domains; and (c) its grammatical structure. A systematic account of the grammar of a language treats of the units and relations that hold within its grammar. This can best be illustrated by resort to an example (1):

*College freshmen don't always enjoy Orientation Week. (1)*  
*In fact some find it a great bore.*

This passage is a one-paragraph discourse which consists of two sentences. Speaking this way, there has already been occasion to mention three grammatical units: 'discourse,' 'paragraph,' and 'sentence.' Discourse (or text) is the most inclusive unit and reflects the realities of oral and written communication. This particular discourse could, for example, have been spoken in a faculty meeting called to consider the value of 'Orientation Week' in the calendar of a private college. But, while discourse is the most inclusive unit and ultimately of almost universal relevance in grammar it is taken for granted in this article and little is said about it. Paragraph is also seen by some as a grammatical unit, and is mentioned briefly in Sect. 3.

In example (1) each sentence is a one-clause, or simple sentence. The clause is a unit of predication; most clauses consist of a verb (or predicate) and its arguments, as encoded in the verb phrase and noun phrases. The study of the internal structure of clauses, and similar and contrasting structures from clause to clause has been a very important part of grammar whether traditional, structural, or generative.

The first sentence of (1) consists of a clause composed of three phrases: the noun phrase *college freshmen*, the verb phrase *don't always enjoy*, and a second noun phrase *Orientation Week*. The first and third parts of the clause are related to the central part as subject and object respectively. In this clause each noun phrase is internally complex and consists of two or more words: (a) *college freshmen* consists of two nouns, the first of which modifies (or qualifies) the second; (b) this is likewise true of *Orientation Week*; (c) the central verb phrase *don't always enjoy* is composed of four words: *do*, *not* (with phonological contraction between them), *always*, and *enjoy*. The internal structure of the phrases again reflects grammatical relations; beginning with the predicate note that *enjoy* is the main verb, *do not* is a negated auxiliary, and *always* is an adverb which is closely related to the verb. In regard to the two noun phrases,

where clearly the former element modifies the latter, it needs to be pointed out that, while such noun-noun phrases are very prolific in English, other noun phrases types such as the following also occur: *those two incoming freshmen*, and *this particularly obnoxious week*, and *John's haircut*.

The word and its internal composition is a further concern. Here the concept of word is tied to that of morpheme as a name for a component-meaningful part of a word. Thus, *freshmen* is a plural of *freshman*; this internal complexity must be recognized as parallel to *boys*, *girls*, *fiefs*, *houses*, and *cruises* which also are plural formations. Here an isolable morpheme /-z/, /-s/, /-əz/, and /-əs/ marks plural with forms varying according to simple phonological rule. *Freshmen*, however, has a plural which is indicated by internal change; this is discussed below under Sect. 1.4.1. The form *freshmen* is complex even if not pluralized, i.e., the form *freshman*. Here the compound form acts exactly like a simple noun, so that *man* : *men* :: *freshman* : *freshmen*. *Freshman* is, then, a derived form consisting of *fresh* + *man*.

To return again to example (1). While the first clause-sentence can be summarized in three phrases, the second such unit is slightly more complex.

- (a) It has an initial conjunctive phrase *in fact*, which serves to contrast the second one-clause sentence with the first in the grammar of the paragraph.
- (b) Besides the subject-verb-object structure, which is similar to that of the first sentence, and besides the initial conjunctive phrase, it also has a final complement *a great bore*. The latter is an attributive noun phrase with a determiner *a*, an adjectival modifier *great*, and a head noun *bore*.
- (c) The second sentence has pro-forms *some* and *it* as its subject and object respectively. *Some* is a pro-word which indicates a logical partitioning of its antecedent *college freshmen* into those who like and those who do not like *Orientation Week*. *It* is another pro-word; it refers back to *Orientation Week* of the first sentence. *Some* and *it* are pronouns which are used anaphorically to tie the second sentence into the first.

In this discussion of example (1), the terms 'discourse,' 'paragraph,' 'sentence,' 'clause,' 'word,' and 'morpheme' as names for grammatical units have been illustrated. Certain grammatical relations have also been briefly referred to in the course of the discussion. The latter will not figure very prominently in the ensuing sections since the focus here is on the units rather than the relations. Here the clause, sentence, and paragraph are highlighted.



## 1. The Clause

The clause is the natural language counterpart of the predicate calculus, i.e., it consists of a predicate and its terms or arguments. As such the clause is the domain of the verb and of the nouns that are associated with it. A language may or may not have case endings marked in its noun morphology. But even in a language with such marking (Latin, Greek, Sanskrit, Lithuanian, northeastern Caucasian languages), a noun with a given case ending often encodes several distinct functions or roles. So, a Latin grammar must list uses of the nominative, genitive, dative, accusative, and ablative. Apparently, semantic roles such as agent, patient, experiencer, and goal are more basic than the case marking as such.

A case-frame classification is a semantic classification of clauses according to verb types and nouns in accompanying roles. A sampling of such a semantic classification of clauses is given here (from Longacre 1983).

- (a) Ambient clauses refer to the environment or the weather. English uses a third person impersonal 'dummy' word *it* in such clauses: *It's hot, it's windy, it's snowing, it's raining*. Trique is an example of a language which employs an inflected verb without any surface structure subject:  $a^3m\dot{a}^{35}?$  'raining,'  $ga^3m\dot{a}^{35}?$  'rained,'  $ga^5m\dot{a}^{5?}$  'will rain.' Korean must use a noun such as 'weather' or 'climate' in meteorological clauses. For 'rain' or 'snow' some languages employ a verb 'fall,' i.e., 'rain's falling.'
- (b) Desire/cognition clauses include not only *want/desire, love*, but also verbs of acquaintance knowledge such as *know, come to know, introduce*, and 'evaluation' clauses such as those containing such verbs as *disdain, praise, judge, accuse, and pardon*. In these verbs there is an experiencer and a goal as in *John loves Mary* where *John* is experiencer, and *Mary* (who may not even be conscious of John's feelings towards her) is the goal.
- (c) Sensation and speech clauses often take special treatment as well, for example, verbs such as *hear, smell, see, tell, speak, show, sing, listen, watch*. To some degree these two sorts of clauses go their separate ways. Korean requires one to say 'we heard the sound of the train,' not just 'we heard the train,' i.e., the source must be specified.
- (d) Physical clauses include clauses referring to physical state, process, action-process, and action. State verbs are such verbs as *(be) broken, (be) wet*. Process includes such clauses as: *the dish broke; the bolt came loose; the pig died*. Action-process clauses include the prototypical transitive verbs which occur with an agent and a patient. They often express an instrument as

well: *John broke the dish; Sue cut the rope with a knife*. In motion verbs the agent and patient coalesce: *Stephen ran the race; They fought a good fight; John ate a full meal*. In these clauses there is an agent/patient and often a surface structure complement (*the race, a good fight, a full meal*).

The surface structure of these semantically differing clauses varies considerably from language to language. At one extreme stands such a verb-subject-object language as Trique which has no cases and marks only a few distinctions in the surface structure, but which marks subject versus object by word order. At the other extreme are languages with a proliferation of cases marked with endings or post-positions, e.g., Japanese, Korean, Finnish, and Daghestan (Caucasian) languages.

### 1.1 Surface Structure Variations

Here brief mention is appropriate of active versus passive, and ergative versus accusative structures. While all these concerns relate to the surface structure organization of clauses, characteristically these variations and contrasts are responsive to the discourse structure (i.e., context on some level).

Active versus passive is well-established in English where it is easy to produce paradigmatic examples such as *John purchased the book* versus *The book was purchased by John*. In both clauses *John* is agent and *book* is patient. But in the former *John* is surface structure subject and *the book* is object while in the latter *the book* is surface structure subject and the agent *John* occurs in a *by* adjunct phrase.

While passive variants of most English transitive clauses are paradigmatically possible, in actual dialogue and monologue discourse passives have restricted and specialized functions: (a) to avoid mention of the agent, when to specify a further participant, i.e., the agent, would distract from the thematic unity of a stretch of discourse; (b) to underscore the affectedness of the patient, and (c) to mark generic statements in expository sentences, instead of specific statements in narrative sentences (Longacre 1983).

Passives in some languages include a type where the agent cannot be mentioned. In still other languages (traditional Japanese and some other Asian languages) passives have an adversative connotation. That is, one might say 'Tarou was scolded by the teacher' but not 'Tarou was praised by the teacher.'

Unlike passive, ergative is a nontraditional term recently introduced into contemporary linguistics. Ergative structures treat as the same morphological (or even morphosyntactic) category the subject of an intransitive verb and the object of a transitive verb as over against the agent of a transitive verb.

Thus, in Zoque there is a special suffix *-ʔs*, which occurs only on the subject (agent) of a transitive verb while the subject of an intransitive verb and the object

## Grammatical Units

of a transitive verb are unmarked. In the agreement of the verb with subjects and objects in Mayan languages the same (or, at least, very similar) pronominal affixes indicate subject of an intransitive verb and object of a transitive, while a special set of pronominal affixes express agreement with the subject (agent) of a transitive verb. In ergative languages with systems of case endings or nouns there is an absolutive case ending for nouns which are either subjects of intransitive verbs or objects of transitives, and there is an ergative case ending for nouns that are subjects (agents) of transitive verbs. Australian and Caucasian languages provide many examples of such usage (Dixon 1979).

### 1.2 Types of Nonindependent Clauses

Besides independent clauses there are three types of non-independent clauses: complement clauses, relative clauses, and adverbial clauses.

The complement clause is an argument of another clause (2):

- (a) *His going there surprised me.* (2)
- (b) *I remember that he went there.*

In (a), *his going there* is subject of the verb *surprised*. In (b) *that he went there* is object of the verb *remember*; it could have taken the same form as in (a). Both *his going there* and *that he went there* fill noun slots within their sentences.

The relative clause qualifies a head noun in a variety of syntactic positions (3):

- (a) *The house that Jack built fell down.* (3)
- (b) *I tore down the house that Jack built.*
- (c) *I put a new front door on the house that Jack built.*

The adverbial clause corresponds to a variety of adverbial functions. Furthermore, the function of such a clause, primarily related to the main clause with which it occurs, may involve structures on paragraph and discourse levels. Example (4) illustrates very briefly something of the range of adverbial clauses in English (temporal, causal, conditional, concessive, circumstantial, and purpose respectively):

- (a) *When Mary came in, Jack stalked out.* (4)
- (b) *Because Mary came in, Jack stalked out.*
- (c) *If Mary comes in, Jack will stalk out.*
- (d) *Although Mary came in, Jack stalked out.*
- (e) *In that Mary had come in, Jack saw no reason for staying.*
- (f) *Mary came home so that Jack could go out for a while.*

### 1.3 Word Order in the Surface Structure

Most languages have a word order (or, properly speaking, a constituent order) which is either its statistically most common ordering, or which at least offers the best base for a description of alternative orderings. The basic word order is characteristically found in sentences which move the story forward in narrative discourse.

English is strongly subject-verb-object, i.e., noun

phrase, verb phrase, noun phrase, in surface structure. So prevalent is this order that grammatical dummies for the subject are resorted to in meteorological clauses, and in some existential structures. Thus in the following *it* and *there* perform such dummy subject functions (5).

- (a) *It's raining.* (6)
- (b) *It's a fact that soup requires crackers.*
- (c) *There is still another angle to the situation.*

In spite of the fact that English is strongly SVO in structure, there are conditions under which English employs alternative ordering. An older form of postposed quotation formula regularly had VS order: '*I'm not going to go,*' said George. Here, a detail of sentence structure, the structure of quotation sentences calls for a departure from the SVO ordering, with subject and verb changing places. A further departure from the normative ordering in English is occasioned by discourse structure, i.e., marking the high point of a story (6).

- Into the pot fell the wolf with a great splash.* (6)

Most native languages of Mesoamerica, Biblical Hebrew, Classical Arabic, and some Nilotic languages are verb-first languages, commonly expressed as VSO. Occasionally one finds a language such as Teposa (Nilotic) where deviation from the standard order is extremely rare. Many VSO languages have, however, a preverbal slot X into which one phrase (and characteristically only one phrase) can be shifted, giving, on occasion, such orders as SVO, OVS, and T/LVS(O), where T and L represent time and location expressions. The X slot can be termed 'emphatic,' but this cover term must in every case be replaced by a more adequate description in the grammar of each VSO language.

Many languages around the world are of SOV structure, viz. New Guinea and some surrounding islands; much of South America; Indic; Omotic, Cushitic and Ethio-Semitic languages of Ethiopia; Caucasian languages; Turkish; Japanese; and Korean. Some such languages are strongly SOV, to the point where any noun phrase which occurs out beyond the verb is considered to be an afterthought which may occur in oral text or speech but which is corrected by rotating it to its usual preverb position in edited, written transcription. A few SOV languages, however, systematically exploit an X slot, i.e., SOV(X) for special discourse purposes. A signal instance of this is in Cayapa text (Ecuador) where a noun phrase in regular position versus one in position X has to do with the aggressor-victim (or antagonist-protagonist) structure of a story (Weibe 1979).

## 2. The Sentence

The sentence is the grammatical unit which embraces clause combination. As such, it is the natural-

language counterpart to the statement or propositional calculus of logic. Sentences may be put together internally according to co-ranking or chaining.

### 2.1 Co-ranking Sentence Structures

Here a further division between languages that have sentences built around internal conjunction and those that do not is posited.

The nucleus of conjunctive sentences turns on the use of conjunctions such as *and*, *but*, and *or*. Again, languages vary greatly in this regard; there may be several sorts of 'and's,' 'but's,' or 'or's' in a given language. Subtle differences in the semantics of conjunctions present a challenge to the analyst—not to speak of problems for translators. Typically *and*-like conjunctions are default connectors; *but*-like conjunctions express contrast and counterexpectation; and *or*-like conjunctions express alternation or at least alternative wordings.

The English conjunction *and* typically joins predication from the same semantic domain (7):

- (a) *My wife collects coins and I do ceramics.* (7)  
(b) *Rudolf plays chess and participates in a string quartet.*

Here leisure time activities is the semantic domain. Example (7a) couples the leisure time activities of two people, while (7b) couples two such activities of the same person. But *and* is a default connector; as such it is sometimes employed where more specific connectors are avoided (8):

- OK, Mary is rich and I'm poor—so what!* (8)

In this example had the speaker meant to foreground contrast he would have employed *but* instead of *and*. Contrast, however, is deliberately played down by employing *and*.

The conjunction *but* foregrounds contrast. This semantic notion can be defined as turning on two sets of lexical oppositions: one set embraces a pair of antonyms or antonym-like terms; the second such set may or may not be antonymically opposed but must be a pair of differing entities/participants. The first set can turn on positive versus negative values of the same/similar predicates (9):

- (a) *He's naive about women but sophisticated about computers.* (9)  
(b) *Jim works outdoors during the summer, but indoors during the winter.*  
(c) *I don't like western movies but my brother loves them.*

In the above, (9a) turns on *naive* versus *sophisticated* and *women* versus *computers*; (9b) turns on *outdoors* versus *indoors* and *summer* versus *winter*; while (9c) turns on *I* versus *my brother* and *don't like* versus *loves*.

The same conjunctive *but* in English (but not necessarily in other languages) expresses counter-expectation or frustration (10):

- (a) *John has long legs but is a very poor runner.* (10)  
(b) *Maple says that Horace is intelligent but he really isn't.*

In (10a) above, long legs might imply that John was a good runner, but the second part of the sentence denies this implication. In (10b) Maple's attributing intelligence to Horace might lead one to believe him to be intelligent, but, again, the latter part of the sentence denies this.

The English conjunction *or* is used in sentences which express alternation—typically of the exclusive variety (not 'and/or'). In English *or* is sometimes reinforced with *either* in the first clause (11):

- (a) *Either Harry should be forced to get up and go to work or his wife should at least phone in that he is sick.* (11)  
(b) *I'll either go to work or I won't.*  
(c) *Did he go to work or stay home?*

Notice that alternation requires only one set of lexical opposites; this is evident in (11b) 'go to work' versus 'not go to work' and (11c) 'go to work' or 'stay at home.' In (11a) the opposed set is internally complex: 'be forced to get up and go to work' versus 'have someone phone in that he is sick.' But a second set of opposites is not present as in contrast.

The conjunction *or* is sometimes used in English to express alternative verbalizations (12):

- We should get some legal protection, call the police, or something on that order.* (12)

For a detailed presentation of conjunctive sentences in a family of non-Indo-European languages (Philippine), see Longacre 1968: 2; for English, see Longacre 1979.

#### 2.1.1 Juxtaposed (Nonconjunctive) Sentence Patterns

Still another type of co-ranking structure does not use sentence-internal conjunction but rather patterns of juxtaposition with restrictions on the internal structure of component clauses. This has been the prevailing pattern of sentence formation in the Otomanguean languages of Mesoamerica, as described for Otomi by Lanier (1968), for Chatino by Pride (1965), and for Trique by Longacre (1966). Take the following pair of Trique sentences (13):

- (a)  $gi^3 da^3 \gamma a^{34} \quad neh^3 \quad zi^3 \quad zi^{21} \quad d\ddot{a}h^3 \quad ga^3 \ddot{c}ih^2$  (13)  
seized they man that put  
 $neh^3 \quad zi^3 \quad du^3 gwa^3 ga^3 \gamma a^3$   
they (in) jail.  
'They seized that man (and) put him in jail.'  
(b)  $gi^3 da^3 \gamma a^{34} \quad neh^3 \quad zi^3 \quad zi^{21} \quad d\ddot{a}h^3 \quad ga^3 \ddot{c}ih^5$   
 $du^3 gwa^3 ga^3 \gamma a^3$   
seized they man  $neh^3 \quad zi^3$   
they (in) jail  
'They seized that man that will-put him in jail.'  
to put

In both the above sentences there is no internal conjunction such as 'and' or 'in order to.' There are, however, aspectual-modal restrictions on the verbs in the juxtaposed clause. The verbs in (13a) are indicative and punctiliar (the *gi-* prefix on the first verb and the *g-* prefix on the second). Consequently (13a) is a

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narrative sentence which records two successive events. In (13b), however, the second verb is modal (lowered tones). Marked this way sentence (13b) expresses an event and its purpose; there is no other way to express purpose in Trique.

With a continuative nonpunctiliar verb in both juxtaposed clauses, overlap or simultaneity is expressed (14):

- $a^3g\ddot{a}r^{34}$   $ni^3$   $yah^2$   $nih^3$   $a^3d\ddot{i}^3y\ddot{a}^{34}$   $ni^3$   $ri^3\ddot{a}^{34}$   $ni^2ma^3$  (14)  
beat they drum precede they corpse  
'They beat a drum as they walked before the corpse (funeral procession).'

Here both verbs are continuative (the punctiliar verbs have a *g-* prefix); the activities indicated are represented as simultaneous.

In the Philippines, juxtaposed sentence types are found side-by-side with sentence types which employ internal conjunction. However, only the former will be examined here. Inibaloi sentences constitute a crucial witness in regard to the fact that two clauses are involved, not one clause with two predicates. The crucial nature of the Inibaloi witness is seen in the fact that that language does not employ equideletion where it might be expected but instead repeats the pronoun (15):

- (a) *Onbowas ira ira man-obda* (15)  
go-early they they work  
'they go early in the morning to work'  
(b) *daw ka mo bayshi*  
go you you pay  
'you go and pay it'

In these examples not only is the pronoun repeated but the whole construction is arranged in chiasmic or mirror image order: VS, SV. In (5a) the pronoun *ira* 'they' is repeated; in (15b) the repeated pronoun changes form according to the requirements of the focus system, i.e., *ka* is subject-as-topic in the first clause and *mo* 'you' is subject-as-nontopic in the second clause—since money to be paid is the unstated topic of the second clause.

In all other Philippine languages encountered by the author equideletion is applied to reduce the sequence of two pronouns to one in such sentences as those illustrated by Inibaloi. The following Ata Negro example is given (16):

- makkido ka paruban ta bale ta* (16)  
as you try for house our  
'Try asking for a house for us.'

### 2.2 Chaining Structures

The sentences which are considered above indicate two patterns of clause combination: (a) adverbial clause with *when*, *while*, *if*, etc. plus main clause (Sect. 1.1); and (b) main clause plus main clause either with or without sentence-internal conjunction (Sect. 2.1). This summary sketch of sentence structures around

the world would, however, be quite incomplete without a presentation of chaining structures.

In a chaining structure (which is often equivalent to a sentence) only one fully inflected verb occurs in the chain; other verbs are less than fully inflected. In English one can say *John got up, put on his clothes, and went outside*. Here the verbs *got up*, *put on*, and *went* are all of the same rank, i.e., they are all independent indicative verbs. But in chaining structures in SOV languages only the equivalent of the last verb would be fully inflected; the first two verbs would be a structure variously called 'converbs,' 'co-verbs,' 'gerunds,' 'participles,' or 'medial' verbs. While semantically the chaining structure is still co-ordinant, structurally the final verb outranks the first two. Conversely, in VSO and SVO chaining structures the first verb is a special initial verb and subsequent verbs in the sentence are variously called 'sequential' or 'consecutive.' The two kinds of chaining are mirror images of each other. Medial-final chaining is the more widespread of the two and is found in the following areas: New Guinea and surrounding islands, many languages of South America, Ethiopian languages, Indic, Korean, Japanese, Turkish, Caucasian, and some native languages of the southwest USA. The reverse structure with initial-consecutive chaining is at present documented only in certain VSO and SVO languages of Africa (Longacre 1990). The latter sort of chaining is not illustrated here.

The following example (17) illustrates medial-final chaining in Wajokeso, a language of Papua New Guinea; note the rudimentary structure of the medial verbs in this sentence versus the structure of the final verb—which is the last word in the sentence (West 1973: 12–13):

- Uhwon-ontae nowe-ntae sosyo ife'n-ontae* (17)  
see -we go -we (name) pick- we  
*sikunofu l-ontae toho yohoj-ontae*  
dark speak -we wood gather -we  
*toho hiyamno sof-ontae nop-ontae*  
wood carry carry-we come -we  
*nowe-ntae toho nomo'n-ontae*  
go- we wood carry-we(with rope from head)  
*yafe lo'mo p-ontae mijo lomo*  
*-wekapmmalohwoyofoho.*  
incline in come -we water in  
crossed = we(indicative)

'We looked and we went and picked some sosyo and we said "It's getting dark," and we gathered firewood and carried the firewood and came and went and carried the firewood by a rope hanging from our head and came down the incline and crossed the stream.'

The medial verbs *uhwonontae*, 'see-we'; *nowentae*, 'go-we'; *ife'nontae*, 'pick-we'; etc. have a suffix, (o)ntae which indicates nonfuture, 1st person plural (and also redundantly marks the same subject referent, since this tense-person-number category is not used with



different subject referents). For the most part the sentence indicates successive events.

### 3. Paragraph

It has been argued (Longacre 1979) that there is a grammatical unit spaced midway between the sentence and the discourse, and that this unit can be given the traditional name paragraph. This structural unit in a given text in a given language, e.g., English, is not necessarily congruent with the orthographic unit which is marked by indentation in English and other languages.

As a grammatical unit, the paragraph (a) has closure (starts and stops); (b) has thematic unity; (c) is sometimes needed to make the grammar of the sentence or clause intelligible; and (d) can be shown to constitute a system. In reference to (a) the use of conjunctions and backreferential adverbial clauses should be noted as well as the occurrence of a sentence or two of introductory/setting nature at paragraph beginning and sentences that conclude the paragraph (a narrative can have static verbs in these places as opposed to the dynamic verbs in the body of the paragraph). In regard to (b) observe not only repetitions of key lexical items (often at beginning and end of the paragraph) but also topicalizations, left shifts, and cleft structures that are theme-establishing. Therefore, in regard to both (a) and (b) there is concern with surface features in grammar and lexicon. There is not space to argue (d) in this article.

In regard to (c) an example from the Ica language of Colombia is very instructive. Within isolated one-clause sentences of a narrative text there simply is no marking of the subject versus objects and complements. Apparently the clause-level grammar of the language is inconclusive at this point and one can go only on lexical probability, e.g., the probability that the dog bit the man instead of the man bit the dog. This is, however, not the whole story. On analyzing structural paragraphs in narratives within the language it turns out that: (a) in the first sentence or by the second sentence of the paragraph a noun (phrase) is marked with the suffix *-ri*; (b) once so marked the indicated noun and the participant which it encodes is the unstated subject of following sentences in the paragraph; (c) if a sentence introduces a subject other

than the thematic participant of the paragraph, then the noun phrase in question is suffixed with *-se?*; (d) if part way through the paragraph the narration decides to switch the thematic participant of the paragraph, then the noun in question is suffixed with *-se?ri*. Clearly, in respect to rules (a)-(d) above the grammar of individual clauses and sentences waits upon the grammar of the paragraph. To insist under these conditions that the paragraph is 'simply a lexical unit' seems untenable. But the Ica situation is simply an extreme illustration of the interweaving of the grammar of the paragraph with the grammar of lower level units.

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## Grammaticalization and Lexicalization

E. C. Traugott

Much work in historical syntax, especially morpho-syntax, and morphophonology can be considered related to or even exemplary of 'grammaticalization'

(sometimes called 'grammaticization'). Grammaticalization is the linguistic process whereby grammatical categories such as case or tense/aspect are organized

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and coded. Typical examples involve a lexical item, construction, or morpheme, that, when used in certain highly specific frames, may come to code an abstract grammatical category. Some synchronic work can also be considered exemplary of grammaticalization; this work rejects static definitions of synchrony and focuses instead on dynamic, typically discourse, perspectives on language.

What distinguishes work on grammaticalization from much other work on morphosyntax is the perspective taken: focus on the interdependence of *langue* and *parole*, of the categorial and less categorial, of the fixed and the less fixed in language, of the motivated and the arbitrary. The study of grammaticalization therefore highlights the tension between relatively unconstrained lexical expression and more constrained morphosyntactic coding, and points to relative indeterminacy in language. In this sense, much work on grammaticalization challenges some of the fundamental theoretical constructs of linguistics since Saussure, including categoriality, homogeneity, arbitrariness, and (more recently) the discreteness and autonomy of syntax.

### 1. Grammaticalization as a Diachronic Phenomenon

From the diachronic perspective, grammaticalization is usually thought of as that subset of linguistic changes whereby lexical material in highly constrained pragmatic and morphosyntactic contexts becomes grammatical, and grammatical material becomes more grammatical. A simple example is the development of *be going to/gonna* as a marker of prospective temporality in English. Originally the progressive form of the main verb *go* plus a subordinator introducing a purposive clause, in certain contexts *be going to* came to function as an auxiliary.

This example illustrates many factors typically involved in grammaticalization (see Hopper and Traugott 1993: Chaps. 3, 4).

- (a) The change occurs only in a very local context, that of purposive directional constructions with nonfinite complements, such as *He is going to help Bill* (i.e. *He is leaving/traveling to help Bill*). It does not occur in the context of purposive directionals in which the locative adverb is present, such as *He is going to London* or even *He is going to London to help Bill*.
- (b) The change is made possible by the fact that there is an inference of prospective action from purposives: if a person is traveling in order to help someone, the help is to be expected in the future. In the absence of a directional phrase, prospective eventhood can be interpreted as salient. (This suggests that syntactic change is triggered by pragmatic factors, and therefore is not autonomous; furthermore that the change is by no means arbitrary.)
- (c) The shift from purposive *be going to* to auxiliary *be going to* involves reanalysis not only of the *be going to* phrase but also of the clause following it; thus [*He is going [to help Bill]*] is rebracketed as [*He is going to help Bill*].
- (d) The reanalysis is discoverable (that is, manifest) only when the verb following *be going to* is incompatible with a purposive meaning, or at least unlikely in that context, for example, *He is going to like Bill*. In other words, the reanalysis is apparent only because the linguistic contexts in which *be going to* can occur have been generalized (or analogized) to contexts which were unavailable before.
- (e) Once the reanalysis has occurred, *be going to* can undergo changes typical of auxiliaries such as phonological reduction. Note that the reduction of the three morphemes *go + ing + to* into one in the development of *gonna* is enabled only because there is no longer an internal bracket.
- (f) Although the process started in the fifteenth century, the various stages of the grammaticalization of *be going [to ...]* are still present in Modern English. (This points to variation rather than homogeneity.)
- (g) The original purposive meaning continues to constrain the use of the auxiliary: *be gonna* is a future of intention, plan, or schedule, in fact a prospective aspect rather than a deictic tense, and can therefore occur in constructions where a deictic future cannot. Compare *If she's going to go to London, we'll have to change our plans* with *\*If she'll go to London, we'll have to change our plans* (the only reading under which the latter is acceptable is the *will* of agreement or intention, not of futurity). This property of persistence of meaning presumably derives from the fact that the older *be going [to ...]* coexists with the newer use, and hence there is reinforcement of older meanings. (This suggests that change is not entirely arbitrary.)
- (h) The verb *go* is a semantically rather empty verb, an inclusive hypernym for verbs of movement.
- (i) In the process of grammaticalization, some of the original semantics of *go* has been lost, specifically motion and directionality; however, this loss has been balanced out by the development of temporal meanings, albeit more abstract ones.

Cross-linguistic studies show that only certain lexical items or classes of lexical items are likely to be used to code grammatical categories. For example, it is unlikely that *wallpaper* or *digress* would become grammaticalized directly, without intervening semantic changes. This is because they are semantically highly specific, and are unlikely to be used frequently in restricted syntactic contexts. What

is found cross-linguistically is that for any given grammatical domain, there is only a limited set of lexical fields, and within them only a limited set of lexical items (those with general hypernymic meaning), that are likely to undergo grammaticalization. For example, case markers, whether prepositions or postpositions, typically derive from terms for body parts or verbs of motion, giving, and taking; temporal from spatial terms; middles from reflexives; articles and certain grammatical gender markers from demonstratives (for several examples, see Greenberg, et al. 1978; Givón 1979: ch. 9; Lehmann 1995[1982]; Traugott and Heine 1991). Furthermore, the paths of change are highly restricted, and evidence minimal step-by-step developments, not large leaps across semantic or pragmatic domains. Accounts of why these restrictions apply appeal to cognitive constraints (Langacker 1977), communicative strategies (Slobin 1985), or the competing motivations of iconicity, economy of expression, and arbitrary grammatical structure (Haiman 1983, Du Bois 1985).

Among mechanisms of change leading to grammaticalization, the most usual is reanalysis (Langacker 1977), although not all reanalysis involves grammaticalization. Reanalysis involving boundary loss, such as is illustrated by *be going to*, is a prototypical case of grammaticalization, since it involves reduction and subsequent phonological attrition. Other cases, however, may involve scope expansion. For example, in the process of the development of complementizers or sentence connectives, a preposition introducing an NP can come to introduce an S, for example, *since evening* > *since he left*, or in the development of epistemic from deontic modals or of tense from aspect, the scope of the operator increases (Bybee 1985; Bybee, Perkin, and Pagliuca 1994; Tabor and Traugott 1998).

Another type of reanalysis is word order change. Although Meillet (1912) included it among instances of grammaticalization, many linguists have specifically excluded it because it is not phonologically expressed and because word order changes occur in both directions, OV to VO and vice versa (cf. Heine and Reh 1984). Nevertheless, word order changes have extensive effects on the morphological structure of a language. For example, postfixal inflections are typically replaced by prepositions in the shift from OV to VO (cf. the gradual replacement in English of the genitive inflection by the preposition *of*, as in Old English *ðara* [*dem* + *gen*] *two*, Modern English *two of them*; cf. also discussion of the Romance perfect below). Word order changes therefore figure centrally in work on grammaticalization, (cf. Claudi 1994).

Another major mechanism in the morphosyntactic changes involved in grammaticalization is analogical spread. As indicated in (d) above, reanalysis can not

be discerned in the absence of evidence from analogical spread. Analogy also operates in the specialization of one grammatical form over another; for example, English had both a *be*-perfect and a *have*-perfect, cf. *She is gone*, *She has taken the book*; the loss of the *be*-perfect is effected by the analogical extension of the *have*-perfect from transitive to intransitive verbs.

Whereas the reanalysis is necessarily abrupt, the spread to new environments is actuated gradually and in small steps (Lichtenberk 1991). The result of the accumulation of changes may be a significant category change (e.g., the development of AUX in English), but individual changes may occur at different rates and may never reach categorial status. For example, *will* and *must* participated in the change to the category AUX that developed in Early Modern English, but started on the path from main verb to AUX in Old and Middle English respectively; and some verbs, such as *ought* and *dare*, have acquired only a subset of the characteristics of AUX. The result is considerable variability in structure at any one synchronic moment.

### 1.1 Unidirectionality

Although many examples of morphological changes that resemble cases of grammaticalization were discussed by nineteenth-century scholars, the term was apparently first used by Meillet (1912). He defined it as the evolution of grammatical forms (function words, affixes, etc.) out of earlier lexical forms, and much work has been done in this tradition.

Alongside the lexical item > morpheme tradition which derives from Meillet, there has been a more recent tradition that focuses on the 'packaging' of information in discourse and evolution of syntactic and morphological structure through fixing of discourse strategies. For example, Givón (1979: 209), characterizes the process as one of cyclic waves (1) involving:

- discourse → syntax → morphology → (1)  
morphophonemics → zero.

The definition proposed at the beginning of this article that grammaticalization is that subset of linguistic changes whereby lexical material in highly constrained pragmatic and morphosyntactic contexts becomes grammatical, and grammatical material becomes more grammatical, combines the two models, by specifying that grammaticalization arises from the use of lexical items, constructions, or morphemes in particular, highly localized, discourse contexts.

Firmly entrenched in diachronic perspective on grammaticalization and in the various definitions outlined above is the hypothesis of a 'cline of unidirectionality,' that is, a pathway that channels change through a limited number of structures that

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are minimally different from one another. This does not mean that all unidirectionality involves grammaticalization; for example, the well-known tendency for [sy] to become [š], but not vice versa, is in itself not an instance of grammaticalization. However, if it results from morpheme boundary loss, then it is an instance of a stage in grammaticalization. The question is precisely what kinds of unidirectionality are necessary or at least typical of grammaticalization.

One kind of semantic-pragmatic unidirectionality often associated with grammaticalization is increase in abstractness. For example, *gonna* is less concrete than *go*; so is the use of French *pas* as a negative marker in *ne ... pas* (derived from *not ... a step*). But increased abstractness is not definitional of grammaticalization. For example, when French negative *ne ... pas* is simplified to *pas*, or Old English negative *ne* becomes fused to *habb-* 'have,' forming *nabb-* 'not to have,' greater abstractness is not involved. Furthermore, not all increased abstractness involves grammaticalization. For example, the shift in meaning from *tongue* (as body part) to 'language' is merely a case of semantic change because the nominal status of *tongue* has not changed.

Much of the literature on unidirectionality characterizes the development of grammatical meaning from lexical meaning in terms of desemanticization, bleaching, and emptying or loss of semantic or pragmatic content. However, grammaticalization has been shown in its early stages typically to involve pragmatic specification and strengthening through 'inferencing.' This inferencing may be metaphorical: in the case of *be going to* the spatial motion of *go* is projected onto temporality (or, to put it another way, temporality is represented by a term from the spatial domain) (Sweetser 1988; Heine, et al. 1991). The inferencing may also be metonymically derived from contiguity in the discourse world (Traugott and König 1991); for example, contiguity with purposive *to* enables projection of the inference of futurity onto *go* in the development of *gonna*. In either case, what is involved is a decline in concrete semantics balanced with an increase in pragmatic content. Typically, the direction of semantic-pragmatic change in early stages of grammaticalization is to greater subjectivity. A particularly clear case is the development of imperative *let us go* (cf. imperative *let us go, will you* > hortative *let's go* (cf. *let's go, shall we*) (see papers in Stein and Wright 1995).

Another kind of unidirectionality often considered characteristic of grammaticalization is increase in structural bondedness. Typically, at the clause level independent clauses are combined, and a cline may develop from independent clauses through some kind of loose juxtaposition to subordination. A well-known example is the development in Indo-European of adjunct and nucleus into relative clauses, cf. Hittite

nu U-NU-TUM ku-it ku-e-da-ni (2)  
and utensil INDEF to-someone

pe-es-ki-it na-at U-UI si-i-e-es-ki-it (3)  
he-gave and-it not he-stole

'Which utensil he gave to someone, he did not steal it' (4)  
(= 'he did not steal a utensil which he gave to someone').

Eventually the *ku-* came to function as a relativizer in an embedded clause. Another example is the development in West African and Asian languages of a verb of saying into a complementizer. In the earliest stages, the verb introduces a direct quotation, for example, Ewe (Lord 1976: 179) (5-6):

mé-be mewoe (5)

I-said 'I-did-it.' (6)

The general verb *bé* 'say' comes to introduce indirect quotation; it is semantically weakened by use after a range of other locutionary verbs, such as 'agree,' and sensory-intellectual verbs such as 'think,' loses its ability to take temporal inflections, and eventually becomes an invariant particle.

At the phrasal level, forms may become less free and more bound via grammaticalization, for example, postpositions become affixes. Although the phenomenon is not confined to grammaticalization, one of its effects is that morphemes undergoing this process move away from cardinal categoriality, and in their later stages lose the ability to refer and to associate with the inflectional and derivational trappings of their morphosyntactic category (cf. Hopper and Thompson 1984). Nouns which develop into adpositions (e.g., *in the stead of* 'in the place of' > *instead of*) lose nominal characteristics such as the ability to be marked for definiteness or number, and verbs which are grammaticalized to case markers tend to lose the ability to be inflected for person, tense, aspect, and mood.

Later stages of grammaticalization typically also involve morphonological changes such as those illustrated by the development of *gonna*. The changes demonstrate not only the phonological effects of boundary loss, but the differentiation associated with it (only the prospective *be going to* undergoes this change, hence *I'm gonna go*, but not \**I'm gonna London*).

Unidirectionality may suggest a single path of evolution. However, in most cases of grammaticalization, multiple processes are at work. Heine and Reh (1984) suggest a tripartite classification of correlations of change: semantic-pragmatic status, grammatical behavior, and phonological substance. Lehmann (1985, 1995 [1982]) uses a bipartite classification according to paradigmatic and syntagmatic processes, that is, according to the alternatives available on the one hand and the effect of linguistic context on the other. Whichever view is taken, an



additional factor needs to be considered: 'frequency.' Given that a form A is a candidate for grammaticalization both because of its semantic generality and its discourse context, the further condition of frequent use has to apply for grammaticalization to take place. The seeds of grammaticalization are therefore to be found in a correlated set of phenomena: semantic suitability, constructional contiguity, and frequency. It is the last that leads to fixing, freezing, idiomatization, etc.

Although structural unidirectionality is a robust concept in grammaticalization, it is by no means definitional for grammaticalization. Nichols and Timberlake (1991) have suggested that sometimes morphological forms may be reassigned to different functions, without there necessarily being any clear directionality. Their example is the redistribution of nominative and instrumental case markers in Russian. Others have pointed to the existence of real counterexamples, for example, in Modern Japanese the following pair exists, along with others of similar structure (based on Matsumoto 1988: 340) (7–8):

Taro-wa wakai(\*-yo)-ga, yoku yar-u(-yo) (7)  
Taro-TOPIC young(PART)-but, well do-PRES(-PART)  
'Although Taro is young, he does a good job.'

Taro-wa wakai(-yo). Ga, yoku yar-u(yo) (8)  
Taro-TOPIC young(PART). But, well do-PRES(-PART)  
'Taro is young, but he does a good job.'

In (7) the particle *-ga* is bound intonationally to the preceding lexical item, and the structure is constrained (*-yo* is not permitted). In (8) *ga* is part of the intonational pattern of the following clause. Unidirectionality would suggest that (7) is a later form than (8). However, the reverse is true: (7) type constructions are quite old, whereas (8) type constructions date only from the seventeenth century (for a variety of other counterexamples, see Joseph and Janda 1988; Harris and Campbell 1995). Of particular interest is the fact that discourse particles frequently involve disjunction rather than bonding. It appears, then, that direction of structural change may be correlated with the type of functional change in question (main verb > auxiliary, adposition > case, clause connective > discourse marker). What is common to all changes that count as grammaticalization is the shift from relatively open class to relatively closed class, operator status (Tabor and Traugott 1998).

Despite counterexamples to unidirectionality from more to less categorial, from more to less independent, the phenomenon is very widespread. It would appear to result naturally from frequent use of forms in highly specific frames. Another phenomenon that arises from frequent use of forms in highly specific frames is renewal of forms that have become

grammaticalized. It used to be argued that renewal typically occurs after a form is lost, for example, prepositions were thought to replace case inflections in English after the inflections were lost through phonological attrition, that is, a cyclical model is assumed of the type (9):

lexicon > syntax > morphosyntax > (9)  
morphophonology > zero.

However, such a model would entail communicative dysfunction. What is seen repeatedly is the competition of two coexisting forms, one older and one newer, where the motivating force seems to be speakers' attempts to express abstract notions in novel ways instead of more idiomatized, frozen ones; these novel ways, after frequent use, may themselves become idiomatized. Sometimes a construction is renewed more or less in the same constituent position. An example is the development in late Latin of the periphrastic future *cantare habeo* 'I have to sing' (lit. 'sing-INF have-I'). This construction was eroded via morphological boundary loss, bonding, and phonological reduction to forms like French *chanterai*. However, in the process, no significant change in overall coding structure occurred, since the earlier form that it replaced was also inflectional (*cantabo*). By contrast, when a word order shift is in process, the newer form often conforms to the newer word order. Thus late Latin inflectional perfect *amavi* 'I have loved' was replaced by the periphrastic *habeo amatum*, eventually French *j'ai aimé*, presumably as the word order change from Latin OV to Romance VO was occurring (Fleischman 1982).

### 1.2 Some Questions for the Further Study of Grammaticalization from the Diachronic Perspective

Among a number of questions still to be answered is what the language-external motivation for grammaticalization may be. If semantic suitability, salience, and frequency are among the prerequisites for grammaticalization to start, then the question still remains as to what motivates the beginning of the process. Is it discourse-pragmatic pressure, that is, the need to be informative and processable and expressive all at the same time (cf. Langacker 1977), the phenomenon of gaps in grammatical paradigms or in the universe of abstract concepts, a 'natural propensity' for signaling metalinguistic relations in nonlexical ways (cf. Bybee and Pagliuca 1985), or some other factor(s)? These possibilities all point to linguistic problem-solving as a clue to motivations for grammaticalization (Lehmann 1985, Heine, et al. 1991). Any claim about problem-solving and functional purpose raises issues of teleology. Because grammaticalization does not necessarily happen in any given instance of potential grammaticalization, considerable caution needs to be

taken not to propose teleological explanations (cf. Keller 1994). Not enough is known yet about communication to argue that 'communicative necessity' motivates the development of grammatical categories. It is primarily through the study of what prevents grammaticalization, or simply fails to trigger it, that the answer to the question of motivation will be discovered. Here the fundamental question is how so much potential ambiguity as evidenced by extensive polysemy is tolerated in language.

Another unsolved puzzle is what motivates the differential speed with which grammaticalization takes place in different functional domains. Observations on African languages suggest that some kinds of development proceed faster than others. For example, new categories of tense and aspect have emerged within a relatively short period, and in some cases a new morphology evolving along the same grammaticalization pattern is already emerging, competing with the old one. The development of noun class systems or of verbal derivation, on the other hand, has been much more conservative: morphological paradigms found today can be reconstructed as having already existed in a similar form and function several millennia ago.

Until recently grammaticalization has been considered primarily in relation to languages with relatively homogeneous histories. A major question is the extent to which processes of grammaticalization in one language will be disrupted or crystallized when this language comes into contact with another, and to what extent and how fast they arise in the new contact language; in particular, what methodologies can be used to address this question with respect to the emergence of stable pidgins and creoles (see Baker and Syea 1996).

## 2. Grammaticalization from the Synchronic Perspective

Although most work on grammaticalization has been done from a historical perspective, there is a growing body of synchronic work considered to be conducted from the perspective of grammaticalization (although the term grammaticalization is typically used). One line of this work tends to be a detailed study of alternative uses of the same form (e.g., Ford and Thompson 1986 on uses of *if-then*); the fundamental task is to identify a cline from more to less categorial or prototypical uses. Another line is typological, and explores ways of coding the same kind of discourse-pragmatic structure cross-linguistically (always through space and sometimes through time), for example, topic continuity (Givón 1983), evidentiality (Chafe and Nichols 1986), ergativity (DeLancey 1981), and middle voice (Kemmer 1993). Usually the unidirectionality of change is assumed; therefore, that which is less categorial, more bonded, etc., is assumed to be more

grammaticalized. This is, however, a dangerous assumption, since counterexamples do sometimes occur (see section 1.1 above). Common to this work is the view that language cannot be understood without attention to its use, and to the fluidity of its patterns. Questions are raised about whether 'grammar' pre-exists use, for example, whether it is innate. Hopper (1988), for example, argues that grammar, in so far as it exists at all, arises out of language use, especially the fixing of forms through frequent use.

## 3. Lexicalization

Like grammaticalization, the term 'lexicalization' is used in a number of different ways.

It has been used to refer to the expression as a linguistic form of a semantic property. Thus in English *have* and *be* can be said to 'lexicalize' ownership, location, possession, existence. Another, related use of the term lexicalization is to name the process whereby an originally inferential (pragmatic) meaning comes to be part of the semantics of a form, that is, has to be learned. For example, in speaking of the fact that the inference of prospective eventhood in the purposive (*be going*) *to* construction became part of the meaning of *be going to* as an auxiliary, it can be said that the inference of prospectivity is lexicalized. Lexicalization in the sense described is as much part of semantic change in general as of grammaticalization.

In another, more restricted, sense of the word which pertains more particularly to grammaticalization, lexicalization is the process whereby independent, usually monomorphemic, words are formed from more complex constructions (Bybee 1985); this process is often called 'univerbation.' One example is the development of words like *tomorrow*, which originated in a prepositional phrase; the boundary between preposition and root was lost, and a monomorphemic word developed. This is an example of the kind of morphological detritus that can result from processes of reanalysis typical of grammaticalization. (Note that *to* is recognizable as a unit that also occurs in *today*, *tonight*, and so there may be different opinions about whether *tomorrow* is or is not monomorphemic.)

Another example is provided by phonological changes that result in morphological loss and the development of idiosyncratic lexical items, such as the English pairs *lie—lay*, *sit—set*, *stink—stench*, all of which have their origins in *i*-umlaut. This *i*-umlaut results from the loss of an original causative marker, so what occurs is morphological loss resulting in a more elaborate lexicon. Although the individual instances cited are counterexamples to the unidirectionality from lexical item to bound morpheme, nevertheless their development is part of an overall shift in causative word formation in English away from post root affixation (still found, but recessively,

in e.g., *redde*), to periphrasis (e.g., *make red*), or separate lexical expression; this itself is part of a larger shift to stem-invariance in the English lexicon (cf. Kastovsky 1989). From this perspective, the lexicalizations are part of a shift in coding to a simpler, more streamlined system of word formation than was typical in earlier Germanic and especially older Indo-European. They can therefore be considered part of a larger framework of grammatical recoding (i.e., of grammaticalization broadly defined), in which several local changes took place at different rates and at different times. As a result, Modern English (like any other language) exhibits characteristics from many layers of coding practices, and is far from homogeneous.

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## Head and Modifier

L. Bauer

Notions of head and modifier have a long history in linguistics, but it is only relatively recently that an attempt has been made to build them in to formal theories of grammar. In that process it has become clear that the notions are not as clear-cut as was once thought, and that there may be several head-like notions which conflict. Usage of the labels has become even more problematical since the beginnings of the 1980s, when attempts began to apply the syntactic notions of head and modifier to other domains as well. To what extent these notions can be extended beyond the syntactic domain is a moot point. In this article, an idea of the use of the labels in syntax will first be given. Following that, this notion will be refined. Then the use of the notions in morphology and phonology will be considered. Variant terminologies and conflicting usages will be pointed out along the way.

### 1. The Basic Notion

Consider the phrase *extremely heavy books*. The most important word in this phrase is *books*, and *heavy* tells one more about *books*. Similarly, *extremely* tells one more about *heavy*. This intuition can be justified grammatically in that there must be an element for an adverb like *extremely* to say something about, while it is possible to have an adjective like *heavy* without the adverb; similarly, an adjective like *heavy* cannot occur without a noun, but a noun can occur without an adjective. In grammatical terminology, *extremely* 'modifies' *heavy*, *heavy* modifies *books*, and conversely *books* is the 'head' of the construction *heavy books*, and *heavy* is the head of the construction *extremely heavy*. In a parallel manner, in the construction *dances beautifully* from the sentence *The instructor dances beautifully*, *beautifully* says something about the dancing, requires the presence of the verb, and is the modifier in the construction, while the verb is the head.

Some authorities use the term 'modify' (and correspondingly, 'modifier,' 'modification') more restrictively than others. For most scholars, in the phrase *heavy books of facts* both *heavy* and *of facts* modify *books*. Some, however, distinguish terminologically on grounds of position between *heavy* which is said to modify *books* and *of facts* which is said to 'qualify' *books*. Other scholars distinguish 'premodification' from 'postmodification.' Within X-bar grammar there is a distinction between 'specifiers' and 'complements' which may have implications for position as well as other things. Some versions of X-bar grammar also add extra distinctions between modifiers and adjuncts. In traditional grammar different kinds of modifiers are given different names, with 'modify'

being used mainly for adverbials. In this article, 'modify' will be used with its wider meaning.

### 2. Refining the Notion

Zwicky (1985) distinguishes a number of ways in which the label 'head' has been used, and suggests that they may not all delimit the same item as the head of a construction on all occasions. Prototypical heads, however, will share all of these features.

#### 2.1 Hyponymy

A construction as a whole will denote a hyponym of the head of the construction. Thus *extremely heavy books* denotes a subtype of *books* and *dances beautifully* denotes a subtype of dancing. These constructions do not denote subtypes of heaviness or beauty.

#### 2.2 Subcategorization

In some constructions, one of the positions cannot be freely filled with any lexical item of an appropriate category, but must be filled in a way which is determined by the other word in the construction. Thus, except in the idiom *to dance attendance* on the verb *dance*, if used transitively, must have as its object either *dance* or a hyponym of *dance* (e.g., *They danced every dance together*, *She danced a jig*). That is, the transitive verb *dance* is 'subcategorized' for the objects it can take. It is not a feature of *jig*, however, that it should occur in construction with *dance* (e.g., *He did a jig*, *They walked through the jig*). The element in a construction which is subcategorized for others it can cooccur with is the head of the construction.

#### 2.3 Morphosyntactic Marking

It is typically the case that one element in a construction bears the inflectional marks which show the relationship of that construction to other constructions in the sentence. In *extremely heavy books* it is the noun *books* which is marked as plural, and that relates to verbal number in, for example, *Extremely heavy books are hard to carry*. In *dances beautifully*, *dances* is marked for third person singular and present tense. The element marked in this way is the head of the construction.

#### 2.4 Government

The element in a construction which determines the morphological form of other elements in the construction is the head. Thus in German *Sie tanzen einen Walzer* 'They are dancing a waltz,' the form *einen* is determined by the verb *tanzen*, and the verb is thus seen to be the head by this criterion.

#### 2.5 Concord

The element in a construction with which other words



agree is the head of the construction. In French *un livre égyptien* 'an Egyptian book' is different from *une livre égyptienne* 'an Egyptian pound' in that *LIVRE* demands masculine agreement in the first instance, but feminine agreement in the second, and is thus revealed as two distinct lexemes as well as as the head of the construction (see *Agreement*).

### 2.6 Distribution Equivalence

If there is one element in the construction which has a parallel distribution to the construction as a whole, it is the head. So, everywhere *extremely heavy books* is found, *books* is also found. Everywhere *dances beautifully* is found, *dances* is also found. *Books* and *dances* are thus revealed as the heads of these constructions.

### 2.7 Obligatoriness

The obligatory element in a construction is the head of the construction. For there to be a phrase of the type *extremely heavy books* there must be an element corresponding to *books*, but there need not be one corresponding to either of the other two words; for there to be a verb phrase like *dances beautifully*, there must be a verb, but there need not be an adverb.

### 2.8 Characterization

The head is the element which gives a construction its particular characteristics. In particular, it is the head, *dance* which, because it is a verb, makes the construction *dances beautifully* a Verb Phrase. That is, the most important characteristic which a head passes on to the phrase it is in, is its grammatical category.

Modifiers are usually seen as no more than the elements which are subordinated to heads. In the clearest cases they restrict the reference of heads, but in other cases the modification is purely structural.

For Bloomfield and some others, the head as defined in Sect. 2.6 and 2.7 was termed the 'center' of the construction. Only those constructions in which one of the elements does have the same distribution as the construction as a whole were seen as having centers, however. They were termed 'endocentric' constructions. 'Exocentric' constructions, such as Prepositional Phrases or Sentences, were deemed not to have centers. This view is not now generally accepted; all constructions are considered to be headed constructions, with the head being determined by other criteria when the criterion of distributional equivalence fails. In dependency grammar, Tesnière's 'régissant' or the German equivalent 'Regens' are sometimes translated into English as 'head' and sometimes as 'governor' or 'regent.' The dependency terms for modifier are 'subordonné, Dependens, dependent'.

It has been suggested that there is a tendency for the relative order of head and modifier to remain constant right throughout a language, and for this to be a force in language change. Particularly within this framework, the terms 'operand' and 'operator' are

sometimes used more or less equivalently to head and modifier respectively.

### 3. Points of Dispute

In a dependency grammar, the head of a particular construction is always a word. In some versions of X-bar grammar the head of a phrase may itself be a phrase (the head of *X'* may be *X'*, for example). While this looks like an important distinction, it is not clear whether it makes any difference in practice, since the head of *X'* will always be *X*, and it is this *X* which a dependency grammarian would view as the head of *X'*.

There is considerable dispute in the literature as to how to treat phrases such as *this strange sentence*. For some it is a Noun Phrase, and its head, the thing which characterizes it, is itself a noun. This analysis is based on a parallel like *the heavy books*, where the obligatory element is *books*, and the element which has the same distribution as the whole construction is *books*. However, *sentence* does not have the same distribution as *this strange sentence* (cf. *This strange sentence is one of Chomsky's examples*, but *\*Sentence is one of Chomsky's examples*); rather it has the same distribution as *this* (as in *This is one of Chomsky's examples*). Some scholars have thus supported the notion that a construction such as *this strange sentence* should be viewed as a Determiner Phrase, with the Determiner as its head. This second interpretation has now become widespread although the examples above, could not be translated into French, for example.

The greatest area of dispute has been over what the head of a sentence is. For many writers in both dependency and X-bar frameworks, the verb has been seen as the head of the sentence, although this does give rise to questions about the status of auxiliary verbs—whether they govern or modify the main verb in the sentence. The main alternative to this position is that the head of a sentence is some abstract element, usually seen as comprising such features as Tense. Thus, in most X-bar descriptions produced in the last part of the 1980s, the head of the sentence is taken to be some element within the Inflection or Agreement nodes.

### 4. Heads in Morphology

There does not seem to be any element in a complex word which has all the features discussed in Sect. 2 above. Nonetheless the notion of head has been used with some success in morphology. It is usually taken within lexicalist morphology that the 'characterization' criterion (Sect. 2.8) defines a morphological head. That is, in the constructions illustrated in *black-bird* and *happiness*, the category of the entire construction (noun in each case) is determined by the second element of the compound and by the suffix *-ness* respectively. This finding has been generalized as the 'Right-hand Head Rule,' which states that in a complex word the rightmost morpheme is the head of the construction. Although the Right-hand Head

## Head Marking

Rule was apparently originally intended as a generalization across languages, there is no doubt that it is stated in far too general a manner, and there are plenty of left-headed words to be found in some languages. It is frequently retained, however, as a statement of the basic regularity in a language like English which, despite counter-examples such as *enrich*, *unhorse*, and *whomever*, is largely right-headed.

This notion of head in morphology, simplistic though it may be, has a number of advantages. Consider one simple example. The suffix *-ity* in English is, in general, restricted so that it can only attach to bases which are Latinate: *adversity* is a normal English word, *hardity* is not, and is probably not even a possible one. Now consider a word like *readability*. *Read* is not a Latinate word, so *-ity* cannot attach to the end of *readability* on the basis of the nature of *read*. Rather, the Latinate-ness must be a feature of *-able*, and must 'percolate' up from that affix to the word as a whole when *-able* is added to *read*. The suffix *-ity* can then be added because of the Latinate-ness that has been inherited by this process of percolation from the head of the constituent word. Precisely what features can percolate from a head to a complete word is a matter of some discussion, though major category is the most obvious one.

Despite such advantages, this notion of head is not entirely firmly established in the morphological literature. First, some dependency grammarians argue that the head of a word cannot be an affix because, by the 'Obligatoriness' criterion (Sect. 2.7 above), the head must be obligatory, and only the base, not the affix, is obligatory. Second, there is dispute as to whether inflectional and derivational affixes are to be treated in the same way, so that all are heads, or whether inflectional affixes are never heads, or are only heads in some restricted sense, though derivational ones are proper heads. This assumes a clear distinction between inflection and derivation, which is not always clearly the case. Third, some typologists have found interesting generalizations based on the assumption that all affixes are always heads, whether they are on the left or the right and whether they are derivational or inflec-

tional. Fourth, the whole head of a word approach assumes a fairly regular relationship between morpheme and morph which, while it may not be far wrong in derivational instances, is clearly not an accurate reflection of reality in many inflectional systems.

Despite these problems, notions of head have been fairly widely used in morphology, though not always under that label. Marchand, for example, distinguishes, largely in semantic terms, between 'determinans' (modifier) and 'determinatum' (head).

### 5. Head in Phonology

While the notion of head is used overtly in dependency phonology, it is also implicit in much work on metrical phonology and can be read into other phonological theories as well. In phonology the head of a construction tends to be equated with the element showing the greatest prominence or sonority (thus, explicitly, Anderson and Ewen 1987: 97). In the syllable the head is the syllabic nucleus, in the foot it is the stressed syllable, in the tone group it is the foot which receives the tonic. The rationale behind this is that the most prominent element is also the obligatory element in the phonological construction: every syllable has a nucleus, every foot contains a stressed syllable, every tone group contains a tonic. Nevertheless it must be asked whether the phonological head thus defined has sufficient in common with the syntactic head (and whether phonological modifiers have enough in common with syntactic modifiers) for the 'structural analogy' (Anderson and Ewen 1987) to be justified, and for it to be assumed that the same structural principles apply to syntactic, morphological, and phonological heads.

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## Head Marking

A. Spencer

In many languages subjects and objects are marked by special inflections (cases), such as Nominative or Accusative, while in other languages the verb itself bears inflections, agreement markers, which cross-reference the subject or object for properties such as

person, number or gender. The verb is frequently treated as the head of the clause, and its subject and objects (more generally, its arguments) are regarded as its dependents. Thus, case inflections constitute dependent marking (DM) while agreement markers

on the verb are instances of head marking (HM). The use of predominantly HM or DM strategies to signal grammatical relationships has a number of repercussions for typology and historical linguistics.

In (1) we see a typical instance of HM and in (2) a typical instance of DM:

- (1) Lakhota (HM, based on Van Valin and LaPolla, 1997: 24)  
Mathó ki hená wičhá-wa-kte  
bear the those 3PL.OBJ-1SG.SUBJ-kill  
'I killed those bears.'
- (2) Japanese (DM)  
Taroo ga hon o yonda  
Taro SUBJ book OBJ read  
'Taro read a book.'

Lakhota has no case marking and Japanese has no agreement morphology. The verb marking in Lakhota cross-references person and number features. In other languages we typically see arguments cross-referenced for gender, animacy, definiteness, or specificity.

Of course, these relations can also be signalled by other means or even not at all, and a language may adopt both HM and DM strategies simultaneously. Nichols (1992: 55) further distinguishes 'detached' marking, in which grammatical dependencies are signalled by markers which are attached neither to head nor to dependent. Clitics occupying constituent- or word-second position are a common example.

### 1. Nichols' (1986) Typology

Nichols (1986) took the basic distinction and extended it to other constructions, discussing a variety of typological and historical questions. Her basic typology distinguishes the following additional cases:

Head	Dependent	
(a) possessed noun	possessor	(izafet-type constructions)
(b) noun	attributive modifier	(izafet-type constructions)
(c) auxiliary verb	lexical verb	
(d) adjective	complement	
(e) adposition	complement	
(f) main clause	subordinate clause/ relative clause	

Cases (a), (b), and (e) have received the most attention in the literature. Sect. 2.1 deals with valency alternations.

HM falls into two broad categories: cross-referencing (by agreement or pronominal affixes) and incorporation.

#### 1.1 'Izafet'-type Constructions

Nouns can take arguments and these can be cross-referenced just as verbs cross-reference their arguments. The commonest cases are possessive constructions. In head-marked possessives, the possessed noun (Pd) signals the possessive relationship with

the possessor (Px). In (3) we see the Persian *ezafe* construction (Lambton 1963: 9):

- (3) ketab-e an mard  
book-E that man  
'that man's book'

The suffix glossed 'E' is the *ezafe* marker whose sole function is to signal that its base is the head of a dependency relationship. In other languages the Px may cross-reference other grammatical properties of the Pd:

- (4) Hungarian possessor agreement (HM) (Nichols 1986: 57)  
(a) az ember ház-a  
the man house-3SG.POSS  
'the man's house (lit. 'the man his-house)'  
(b) az én ház-am  
the I house-1SG.POSS  
'my house'

In a DM construction, as exemplified by the English gloss of (4b), it is the Px which bears the marker. In addition, Persian uses the *ezafe* construction for signalling that a noun is modified by an attributive adjective:

- (5) Persian *ezafe* (Lambton 1963: 129)  
mard-e xub  
man-E good  
'a good man'

In a language with a DM construction the adjective would agree with the head noun in various properties (case, gender, number).

#### 1.2 Adpositions

Many languages have adpositions (prepositions or postpositions), and these will often govern a specific case form (DM). However, in some languages the adposition cross-references its complement:

- (6) Abkhaz postpositions (DM, Nichols 1986: 60)  
a-jəyas a-q'nə  
the-river its-at  
'at the river'

#### 1.3 Incorporation

The relation of a verb to its complement may be signalled by incorporation of the object into the verb to form a compound word, as in the Chukchee example (7) (Skorik 1948: 73):

- (7) (a) ataw, mə-wala-mna-rkən  
come.on, 1PL.SUBJ.IMPER-knife-sharpen-ASP  
(b) wala-t mə-mne-rkən  
knife-ABS.PL 1PL.SUBJ.IMPER-sharpen-ASP  
'Let's sharpen (our) knife/knives'

Note that the incorporated noun root in (7a) triggers vowel harmony in the verb stem and is unmarked for number (unlike the Absolutive noun object in (7b)).

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It is extremely rare for verbs to incorporate subjects. When this happens (as is the case in Chukchee, for example), the subject always has the semantic and sometimes also the syntactic properties of an object (i.e. the predicate is unaccusative). There are no really secure examples recorded of a language incorporating the subject of unergative or transitive predicates. This is in marked contrast to agreement, of course, where object agreement almost invariably implies subject agreement and where it is not uncommon for only subjects to trigger agreement.

Chukchee nouns incorporate their modifiers as in (8) (see Spencer 1995 for these and other examples):

- (8) (a) *nə-ʔomrə-qen gilgil*  
ADJ-cold-ADJ ice.ABS  
(b) *ʔomrə-gel*  
cold-ice

The absolutive form of *gilgil* 'ice' reduplicates the root. When it incorporates the adjective, the root appears in its unreduplicated form, and undergoes vowel harmony (because the adjective has a vowel from the 'dominant' series and *gil* is a recessive root). Chukchee also incorporates possessive modifiers (including possessive forms of pronouns) though such incorporation seems to be rare cross-linguistically.

Incorporation strategies interact with DM marking strategies in Indo-Aryan languages such as Hindi-Urdu. This language case marks dependents of the verb. However, a noun in the unmarked Nominative case can form a special dependency with the verb reminiscent of full-blown incorporation of the kind seen in Chukchee. Thus, Mohanan (1995) argues at length that the noun *bharosaa* in (9) is incorporated by the verb:

- (9) *raam-ne mohan-par bharosaa kiya*  
Raam-ERG Mohan-LOC reliance did  
Raam relied on Mohan

If this type of incorporation is commensurate with the more standard type found in Chukchee then we have a case of a DM strategy which is developing into a HM strategy.

Head marking of adpositions by incorporation is seldom discussed and it is not easy to find clear-cut cases. Chukchee has postpositions which govern the locative case and are generally homophonous with adverbs (much as English prepositions are). However, Skorik (1948: 100f) discusses a number of instances (culled from folk texts collected at the end of the last century by Bogoraz) in which these adverb/postpositions can incorporate their complement (with Skorik's original transcriptions: *əttooca* would normally be transcribed *ʔəttəjoca*):

- (10) *tətl-əttooca* (cf. *titl-ək əttooca*  
door-in.front.of door-LOC in.front.of  
'in front of the door'

- (11) *naj-kaletlə* (cf. *nəj-ək kaletlə*)  
hill-down hill-LOC down  
'down the hill'

Incorporation is witnessed by the fact that the complement is in the stem form and not inflected for Locative case, and the complex is subject to the word-domain process of vowel harmony (as seen in (11)).

## 2. Valency Alternations and the Polysynthesis Parameter

The importance of HM as a typological parameter has been emphasized by Baker (1988, 1996).

### 2.1 Valency Alternations

Many languages signal valency increasing alternations on the verb; the commonest of these are causative and applicative constructions. In the approach of Baker (1988) all such alternations are treated as instances of syntactic incorporation, i.e. HM.

Causative morphology is illustrated in the Chichewa example in (12) (taken from Alsina 1997: 209, tones omitted; 'FV' denotes a the 'final vowel', a stem forming element in Bantu):

- (12) (a) *Mkango u-ku-lemb-a ndakatulo*  
lion SUBJ-PRES-write-FV poem  
'The lion is writing a poem.'  
(b) *Mlimi a-ku-lemb-ets-a mkango ndakatulo*  
farmer SUBJ-PRES-write-FV lion poem  
'The farmer lion is making the lion write a poem.'

The complex verb form (12b) corresponds to the combination of higher causative *make* and embedded verb *V* in the English analytic gloss. Chichewa also has an applicative (or applied) construction, in which an oblique complement alternates with a direct object (Spencer 1991: 287):

- (13) (a) *Mbidzi zi-na-perek-a msampha kwa nkhandwe*  
zebras SUBJ-PAST-hand-FV trap to fox  
'The zebras handed the trap to the fox.'  
(b) *Mbidzi zi-na-perek-er-a nkhandwe msampha*  
zebras SUBJ-PAST-hand-APPL-FV fox trap  
'The zebras handed the fox the trap.'

Baker (1988, 1996) develops a syntactic account of these alternations within a Principles-and-Parameters model. Alsina (1992, 1996), Alsina and Mchombo (1993) and Ackerman and Webelhuth (1998) offer contrasting lexical accounts within the framework of Lexical Functional Grammar. Baker's approach treats the alternation as purely syntactic: the causative or applicative affixes are originally embedded verbs or prepositions in syntactic structure and remnants of an embedded clause structure remain in the surface syntax (see Spencer 1991 for a summary). This is schematized in (14), where *t<sub>V</sub>* is the trace of the embedded verb:

- (14) X Verb-cause [Y *t<sub>V</sub>* Z]



In this analysis we could say that the syntactic dependency between main verb and embedded clause is marked on the verb head. In lexicalist analyses the HM relationship is more abstract. To exemplify, a causative verb has a lexical argument structure (or semantic structure) representation roughly along the lines of (15):

- (15) cause [X, Y [verb [Y, Z]]]

Here, the causative morphology on the syntactic head verb could be said to signal the realignment of roles of the arguments of the verb and causative predicate.

## 2.2 The Polysynthesis Parameter

Although languages often seem to be predominantly HM or DM, Nichols stresses that many languages show mixed properties, and, indeed, many constructions can be both HM and DM (as when a verb, say, shows subject agreement and assigns Nominative case to the subject). However, Baker (1996) has argued that languages which permit the verb to incorporate its object occupy a special position typologically. These are radically head marking in the sense that their verbs always cross reference their arguments by means of agreement or pronominal affixation (in addition to permitting incorporation). He calls these 'polysynthetic' languages (though the term is far from coextensive with the more traditional usage) and he claims that all such languages respect the Morphological Visibility Condition (or Polysynthesis Parameter, Baker 1996: 17):

- (16) The Morphological Visibility Condition (MVC)  
A phrase X is visible for  $\theta$ -role assignment from a head Y only if it is coindexed with a morpheme in the word containing Y via:  
(i) an agreement relationship  
(ii) a movement relationship

(For most languages this means 'either (i) or (ii) but not both', but in some languages the verb agrees with the object it has incorporated.)

The MVC is a macroparameter, that is a single parameter of variation which determines a cluster of individual grammatical properties by virtue of interaction with other linguistic principles (in Baker's case, those of Principles and Parameters syntax, Chomsky, 1986). He also argues that all the truly polysynthetic languages are non-configurational. This means that overt subjects and objects do not occupy a special structural place in the syntax, specifically, it isn't the case that the subject phrase is necessarily a sister to the verb phrase, and the object phrase doesn't have to be a sister to the verb. The MVC stipulates that the 'real' arguments of the verb are the pronominal affixes or agreement markers, and the overt phrases which fulfil the roles of subjects and objects are actually adjuncts, with no special structural relation to the verb, rather like dislocated phrases as in 'Tom,

he's already read it, that book'. This can be shown by the way pronominals are interpreted. In a configurational language which has reflexive pronouns, a non-reflexive pronoun such as 'he' cannot be made coreferential to a noun phrase which occupies a lower position in the syntactic tree. Thus (17a) cannot mean (17b):

- (17) (a) He broke John's knife  
(b) John broke his own knife

In non-configurational languages overt noun phrases don't occupy such structural positions and so the corresponding sentences can be synonymous.

Among these properties that are said to flow from the MVC are the following:

- absence of non-finite subordination (e.g. infinitival clauses)
- absence of 'verb incorporation' (especially, morphological causatives), though causatives of unaccusative verbs are permitted.

The bold claims made by Baker have yet to be properly explored in the typology literature. The approach raises a number of important conceptual questions, including the notion of 'agreement' and what constitutes a head. These are the subject of the next sections.

## 3. On the Characterization of Head-Marking

### 3.1 Definitions of 'Head'

In a number of approaches to syntax the head of syntactic phrase can be a functional element such as a determiner or an auxiliary verb rather than a lexical item. This generally means that we must take 'head' to mean 'lexical head', noun, verb, adjective, or preposition. However, there are occasions when it seems we must treat an auxiliary verb as the head of a clause. Thus, it is often an auxiliary verb that bears the main inflections for agreement, tense and so on, while the lexical verb appears as a participle or other non-finite form. Also interesting are cases of so-called 'light verbs'. These are verbs which are largely bleached of lexical meaning and which are used in two main functions, both found in Indo-Aryan languages. First, they combine with words of other parts of speech (e.g. nouns) to form complex predicates with verbal meaning (example (9) above). Second, they combine with other verbs to convey aspectual, modal, and other types of meaning ((18) Butt, 1997: 127):

- (18) anjum uth par-i  
anjum.FEM.NOM rise fall-PERF.FEM.SG  
'Anjum suddenly got up.'

The light verb *par-* corresponds to a full verb with the meaning 'to fall'. However, as an aspectual verb it conveys the sense of doing something suddenly. Notice that the lexical verb *uth* appears in its uninflected, base form in (18) and it is the light verb which receives the tense and subject agreement morphology.

## Head Marking

Auxiliaries usually govern specific types of non-finite form and one and the same auxiliary verb may have very different functions when combined with different participles or infinitive forms. This is seen from the English examples in (19) with the auxiliaries 'be' and 'have':

- (19) Tom is writing a letter  
Tom is to write a letter  
Tom has written a letter  
Tom has to write a letter  
The letter was written

In such constructions the 'main' (i.e. lexical) verb behaves like a dependent of the head auxiliary.

Nichols (1986: 84f) discusses the phenomenon of 'head migration' in which scope markers such as *only* attach themselves to the verb head rather than to the phrases they actually modify: *I only work at home in the evening* whose preferred interpretation is ... *only in the evening*. This phenomenon is found with auxiliaries, too. Auxiliaries may host clitic clusters which would otherwise congregate around the verb ('clitic climbing'; see Spencer 1991: 357–8 for an example) and may also host agreement with the object of the verb they take as a complement ('agreement climbing'). Agreement climbing has been noted in a variety of unrelated languages. In (20–22) we see illustrations from Chukchee (see also Spencer 1991: 389). Chukchee transitive verbs invariably cross-reference their direct objects, and a number of auxiliary verbs and other verbs with phasic or modal meanings receive the object agreement one would otherwise expect on the embedded verb. One clear instance of this is found with negative sentences. One way of negating a clause in Chukchee is to combine a special negative non-finite form of the verb with an auxiliary. The choice of auxiliary depends on the transitivity of the verb, *it-* for intransitives and *rət-* for transitives. This intransitive auxiliary agrees just with the subject, (20), while the transitive auxiliary agrees with both subject and object, (21) (Skorik 1977: 256):

- (20) (a) ɣəroq ʔaacekə-t nə-tejkew-qinet jarak rəmagtə  
three boys 3PL.SUBJ-fight-3PL.SUBJ house  
behind  
'Three boys are fighting behind the houses.'  
(b) Gəmninet ekke-t igər e-tejkew-ke r-it-ɣət  
our son-PL today NEG-fight-NEG FUT-  
AUX.INTR-3PL  
'Our sons won't be fighting today.'
- (21) (a) Wətku ʔəquntetak tə-ket'o-gʔan peljajo caat  
only having.depart 1SG.SUBJ-remember-  
3SG.OBJ left lasso  
'Only when I had gone did I remember the lasso  
I had left.'  
(b) əmə ɣəgatək ɣinɣej-e a-ket'o-ka rət-ninet pel-  
jajotte lilit  
and next day boy-ERG NEG-remember-NEG  
AUX.TRANS-3SG.SUBJ/3PL.OBJ left gloves  
'And the day after, the boy didn't remember  
the gloves he had left.'

In addition, a modal auxiliary such *lewaw-* 'not to be able', which takes an infinitive as complement, also agrees with the direct object of a transitive verb complement (Kozinsky, Nedjalkov and Polinskaja 1988: 670):

- (22) Qərir-nin tanləməŋqo -lʔu-k lewaw-nen  
search-3SG.SUBJ/3SG.OBJ everywhere find-INF  
not.able-3SG.SUBJ/3SG.OBJ  
'He looked for her [his wife] everywhere but could  
not find her.'

The same pattern is observed with other verbs including *moo-* 'begin' and *paa-* 'stop'.

In many languages negation is firmly attached to the verb, whatever its scope. In Russian it is possible to say (23) or (24), which in their natural interpretations are synonymous:

- (23) Ja ne osobenno xochu ètogo  
I NEG particularly want this  
'I don't particularly want it.'  
(24) Ja osobenno ne xochu ètogo  
I particularly NEG want this  
'I don't particularly want it.'

In (24) the negation marker *ne* has migrated towards the main verb *xochu* 'want'. In Czech such migration is grammaticalized in that the verb forms a single word with a negation prefix (as evidenced by the fact that the prefix is stressed) (Short 1993: 511):

- (25) (a) Já jsem ho ne-viděl  
I AUX him NEG-saw  
'I didn't see him.'  
(b) Všichni tomu ne-věří  
all that NEG-believe  
'Not all of them believe it.'

Notice that the negation in (25b) takes the quantified subject in its scope (*not-all*).

In Czech the negative prefix almost always appears on the lexical verb. In Serbo-Croat, however, it is the auxiliary which bears the negation prefix (Browne 1993: 361), as we see in (26):

- (26) (Ja) ni-sam ga video  
(I) NEG-AUX him saw  
'I didn't see him.'

### 3.2 Definitions of 'Marking'—'Wrong-headedness'

Discussion of HM tends to take for granted what is meant by 'marking', but there are a number of interesting issues here.

Agreement-like morphology frequently arises from the morphological incorporation of cliticized material which gets fused in historical development with a lexical head. An interesting example of this is seen in Hausa nominal phrases expressing possession. Hausa uses a strategy reminiscent in which a possessive marker placed after the Pd agrees with the Px, as seen in (28, 29) (Kraft and Kirk-Greene 1973: 41–2, where *Daudà* and *Audù* are male and female names respectively):

- (28) kâre na Daudà  
dog of.MASC David  
'David's dog'
- (29) sâniyâ ta Audù  
cow of.FEM Audu  
'Audu's cow'

The linking element *na/ta* cross-references the possessor for gender (in the singular at least). However, the forms in (28, 29) alternative with those in (30, 31):

- (30) kâren Daudà  
dog.of.MASC David  
'David's dog'
- (31) sâniyar Audù  
cow.of.FEM Audu  
'Audu's cow'

In these forms the linking element fuses with the previous noun, causing morphophonemic changes and effectively inducing novel HM agreement morphology. However, this is not found when the head noun is otherwise modified, as in (32, 33):

- (32) dôkin nân na Bellò  
horse this of.MASC Bello  
'this horse of Bello's'
- (33) kèke biyu na Garbà  
bicycles two of.MASC Garba  
'Garba's two bicycles'

In other words, the HM here is illusory, because it is subject to a strict linear adjacency constraint which is never found with true HM.

However, there are well-attested cases in which a head is inflected for the 'wrong' features as a result of grammaticalization of the kind of cliticization process seen in Hausa. A standard example is provided by the portmanteau inflecting prepositions of Romance languages such as French:

- (34) [ppde [Dplâ [Nptable]]]  
of the.FEM table  
'of the table'
- [ppdu [DP ?? [NPain]]]  
of.the.MASC bread  
'of the bread'
- [ppdes [DP ?? [Nptables]]]  
of.the.PL table.PL  
'of the tables'
- [ppdes [DP ?? [APautres [Nptables]]]  
of.the.PL other.PL table.PL  
'of the other tables'

Examples (34b–d) contrast with *le pain* 'the bread', *les tables* 'the tables' and *les autres tables* 'the other tables'. The forms *du* and *des* have to be regarded as (suppletive) inflected forms of the preposition *de*, being masculine singular and plural respectively. This

interacts with phonological requirements in an interesting manner, however. If the following word begins with a vowel, the definite article *le* assumes the elided form *l'* and the preposition remains uninflected: *de l'autre pain* 'of the other bread' (\**du autre pain*).

In English pronouns with elided auxiliaries such as *she'll*, *I've*, *we're* and so on are actually pronouns inflected for tense (Spencer 1991: 383, Barron 1998). We know this because the pronoun undergoes allomorphy when it receives the auxiliary. For instance, *she'll* is pronounced with a short lax /i/ so as to rhyme with *kill*, and *we're* can be pronounced like *were* or just as *wə*. Such alternations in pronunciation are not possible with other hosts. For example *Lee'll do it* can never be pronounced the same as *Lill do it* (as in *I saw Lill do it*). *Lee'll* always has to consist of two syllables, whereas *she'll* generally has just one. Wherever a putative clitic triggers allomorphy on its host we are in fact dealing with affixation. If the host of the clitic-turned-affix is the sort of head that does not normally inflect for the properties borne by that affix, as in the case of French *du*, then we have 'wrong-headed' marking. This is not HM, but rather an extreme instance of 'detached' marking.

#### 4. Conclusions

In many languages morphological marking on lexical heads is important for the establishment of syntactic relationships. Verbs, nouns, and prepositions frequently cross-reference their arguments, and verbs often incorporate complements. Verb-marked valency alternations can be treated as HM and these are very common. Other less common types of HM are also attested. Although HM generally applies to lexical heads, the same patterns can be seen with auxiliary verbs. In some instances, a head is marked for unexpected properties, giving rise to what we may call 'wrong-headedness'.

#### Abbreviations

ABS absolutive (case), ADJ adjective, APPL applicative, ASP aspect, AUX auxiliary, DM dependent marking, ERG ergative (case), FEM feminine, FUT future, FV final vowel, HM head marking, IMPER imperative, INF infinitive, INTR intransitive, LOC locative, MASC masculine, MVC Morphological Visibility Condition (Baker), NEG negation, NOM nominative, OBJ object, Pd possessed noun, PERF perfective (aspect), PL plural, POSS possessive, PRES present, Px possessor noun, SG singular, SUBJ subject, TRANS transitive.

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## Honorifics

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The term ‘honorifics’ refers to special linguistic forms that are used as signs of deference toward the nominal referents or the addressee. The system of honorifics constitutes an integral component of the politeness dimension of language use, but whereas every language appears to have ways of expressing politeness, only certain languages have well-developed honorifics. Generally speaking, the languages with highly developed honorifics systems are concentrated in Asia—Japanese, Korean, Tibetan, Javanese, and Thai being among the best-known languages of this group. A thorough study of honorifics requires a two-pronged approach. The description of honorifics as grammatical forms is one thing and is relatively easy to arrive at, whereas the description of their actual use requires wider pragmatic as well as sociolinguistic perspectives that take into consideration elements of a conversational situation, such as the relationship between the speaker and the addressee, and the functional role that honorifics play in communicative interaction. While the pragmatic aspects of honorifics usage are gaining increasing attention in the field, the available descriptions are by and large purely

grammatical with little information on usage. This article endeavors to correct this imbalance by devoting one half to the grammatical aspects of honorifics, and the other half to the pragmatic and sociolinguistic issues, where aspects of Japanese honorifics usage are examined in some detail.

### 1. Referent Honorifics

‘Referent honorifics’ are those forms that are used to show deference toward the nominal referents. This type of honorifics is most widespread and the historical development of the honorifics system, as available in the case of Japanese, indicates that this is the most basic form of the honorifics.

#### 1.1 Titles

The commonest forms of referent honorifics are honorary titles used together with the name. Many languages have honorary titles similar to the English form *Mr* and the German form *Herr* that derive from the nouns designating higher social roles or divine beings. Also common are titles deriving from the names of occupations or ranks in specific social



Table 1. Javanese personal pronominal forms (adapted from Sakiyama 1989).

	Ordinary	Middle	Honorific	Super-honorific
1st person	<i>aku</i> <i>tak-</i> , <i>dak-</i> <i>-ku</i>	<i>kulâ</i>	<i>kulâ</i>	<i>kawulâ</i> <i>abdidalem</i>
2nd person	<i>kowé</i> <i>ko(k)-</i> , <i>-mu</i>	<i>(an)dikâ</i>	<i>sampéyan</i>	<i>panjenengan</i> <i>nandalem</i> <i>sampéyan dalem</i> <i>slirâ</i>
3rd person	<i>dhèwèk(n)é</i> <i>dhèk(n)é</i> <i>di-</i> <i>-(n)é</i>	<i>piyambaké</i> <i>kiyambaké</i>	<i>piyambakipun</i> <i>kiyambakipun</i> <i>dipun-</i> <i>-ipun</i>	<i>panjenenganipun</i>   <i>-ipun</i>

groups, e.g., a military unit, a business group, and kin-terms that are considered high in social standing; e.g., *doctor*, *professor*, *general*, *uncle*, *aunt*.

Something similar to the honorary titles are honorific endings observed in Korean, Japanese, and others. The Korean suffix *-s'i* attaches either to the full name of a respected person or just to the family name of a person engaged in a menial labor, whereas the higher-level ending *-nim* attaches to the combination of a family name and a professional title; e.g., *Kim kyoswu-nim* (Kim professor-SUFFIX) 'Professor Kim.' The Japanese ending *-san* and its higher-level counterpart *-sama* attach to family names as well as given names yielding honorified forms; e.g., *Yamada-sama* 'Mr Yamada,' *Masao-san* 'Masao (honorified first name).' These are, in fact, part of the generamelioratory system of reference, which includes other endings such as *-kun* (used for the names of male equal or inferiors) and the diminutive *-tyan* (used typically for children's first names).

### 1.2 Pronouns

Pronominal forms, especially those referring to the addressee, namely the second-person pronouns, are often the target of honorific elaboration. The best-known example of this case is the use of the plural pronouns, such as the forms for *you* (PL), *they* and *we*, in reference to singular addressee (or a third-person referent) as a sign of respect; e.g., French *vous*, German *Sie*, Russian *vy*, Tagalo *kayo* 'you.PL,' *silâ* 'they,' Turkish *siz* 'you.PL,' Ainu *aok* 'we.INCL.' Javanese presents one of the most complex pronominal systems elaborated along the honorific dimension (see Table 1).

One notable honorific aspect having to do with the second-person pronominal forms is that many languages of Asia, e.g. Japanese, Korean, Dzongkha (Bhutan), simply avoid using the second-person pronominals to a superior out of deference (see Sects. 3 and 5). In these languages the second-person reference, if the need arises, is made by the use of a professional title, e.g., Japanese *sensei* 'teacher' Korean *sacangnim* 'company president,' or of kin-terms e.g., Korean *emeni* 'mother,' or of a combination of a

kin-term and an honorific ending, e.g., Japanese *ozisan* 'uncle.'

### 1.3 Nouns

The honorified nouns express deference either directly toward the referent or indirectly toward the owner, the creator, or the recipient of the referred object. As opposed to the first two categories of the referent honorifics, the number of languages with this system declines sharply.

Both suppletive and regular morphological processes as well as combinations of both are observable. Korean nominal honorific forms *cinji*, *yonse*, *songham* supplete *pap* 'meal,' *nai* 'age,' *irum* 'name,' respectively. Often suppletive honorific forms are loanwords borrowed from superior cultures. For example, the honorific forms *bida* 'father' and *manda* 'mother' for the native Thai words *po* and *me*, respectively, are from Pali. Likewise, many honorific forms in Javanese are loanwords from Sanskrit and Arabic; e.g., *arta* 'money' (Sanskrit), *kuwatir* 'to fear' (Arabic).

Kin-terms in Japanese are made honorific by the suffixation of honorific endings *-sama* or *-san*. Between *o-kaa-sama* 'mother,' and *kaa-san* 'mother,' for example, the first form with the honorific prefix *o-* (see below) and the *-sama* ending is the more elevated form.

Nominal honorific forms typically refer to objects possessed or created by respected persons. The favorite nominal honorific derivation in Japanese is by means of the prefix *o-* or *go-*; e.g., *o-kaban* 'bag,' *go-hon* 'book,' *o-hanasi* 'talk,' *go-koogi* 'lecture.' A combination of suppletion and prefixation is observed in the Japanese form *o-mesimono* for *kimino* 'Japanese-style clothes' or *huku* 'Western-style clothes.'

The all-purpose Japanese nominal honorific prefixes *o-* (for native words) and *go-* (for Sino-Japanese loanwords) have their etymologies in words with meaning associated with greatness (for the native *o-*) and ruling (for the Chinese *go-*). Tibetan nominal honorific prefixes, on the other hand, have a classificatory scheme as their basis (Kitamura 1974). Thus, the honorific form *bdu* for *mgo* 'head' functions as an

## Honorifics

honorific prefix for objects having to do with the head, upper part, or superior; e.g., *skra* 'hair' → *bdu-skra*, *zhwamo* 'hat' → *bdu-zhwa*. Likewise, the honorific form *gsol* for *bzas* 'eat' and *btung* 'drink' goes with those objects having to do with foods and eating; e.g., *ito* 'food' → *gsol-chas*, *thab-tshang* 'kitchen' → *gsal-thab*.

### 1.4 Subject Honorifics

Just as the possession can be the target of honorification, one's being or action can be honorified as a way of showing deference toward the referent of the subject nominal, namely the actor. Of course, a subject nominal itself can be honorified by, for example, the choice of the second- or third-person pronominals (see above), but the case under consideration involves alterations in verbal form. A case can be clarified by comparing the plain Japanese sentence (1) *Tanaka ga ki-ta* (Tanaka NOM come-PAST) 'Tanaka came' and the honorific counterparts, (2) *Tanaka-kyoozyu ga ki-ta* (Tanaka-professor NOM come-PAST), and (3) *Tanaka-kyoozyu ga ko-rare-ta* (Tanaka-professor NOM come-HON-PAST) 'Professor Tanaka came.' Sentence (2) with a professional title for the subject nominal expresses a certain degree of deference toward the teacher. But a more appropriate form would be sentence (3), in which the verb also changes its form in accordance with the speaker's deference toward the referent of the subject.

Japanese, Korean, and Tibetan have a highly developed system of subject honorification. As shown in the above example, Japanese uses the passive/potential/spontaneous suffix *-(ra)re* attached to a verbal stem and derives the subject honorific verbal form: *ik-u* (go-PRES) 'go' → *ika-re-ru* (go-HON-PRES). Korean has the subject honorific suffix *-si* that attaches to a verbal stem: *o-ta* (come-IND) 'come' → *o-si-ta* (come-HON-IND). Tibetan uses the honorific form *gnang* for the verbs of giving and receiving as a productive subject honorific verbal suffix; *thugs* 'meet' → *thugs-gnang* (meet-HON), *bzos* 'make' → *bzos-gnang* (make-HON).

Besides these productive honorific forms, a fair number of suppletive subject honorific forms are also seen in all of these languages. The Japanese form *irassiyaru* suppletes *iru* 'be,' *iku* 'go,' and *kuru* 'come.' *Khesi-ta* is the Korean subject honorific form of *iss-ta* 'be.' The Tibetan form *gnang* seen above suppletes *ster* 'give,' *btang* 'send,' and *sprad* 'hand over.'

In addition to these, Japanese has a circumlocution subject honorific form. This involves the following processes: (a) the conversion of the verbal complex into a nominalized form, (b) the attachment of the honorific prefix *o-/go-* to the nominalized form of the verbal complex, and (c) the predication of the subject by the verb *naru* 'become' together with the adverbial complement form of the nominalized verbal complex. This converts the sentence *Tanaka-kyoozyu ga aruk-u* (Tanaka-professor NOM walk-PRES) 'Professor Tanaka

walks' into *Tanaka-kyoozyu ga o-aruk-i ni naru* (Tanaka-professor NOM HON-walk-NOMINALIZER DAT become), where the *o-aruk-ini* (HON-walk DAT) portion is the adverbial complement form of the nominalized verbal complex. Notice that this type of circumlocution is fully grammaticized in the sense that it is associated only with the honorific value, with no literal reading available. In fact, this grammaticization aspect is a basic defining characteristic of honorifics that distinguishes them from ordinary polite expressions such as English *Will you open the door, for me?* and *Do you mind opening the door for me?*, which are still associated with literal meanings.

The Japanese honorific prefixes *o-/go-* also attach to adjectival predicates, yielding the third type of subject honorific form in the language; e.g., *Hanako wa utukusii* (Hanako TOP beautiful) 'Hanako is beautiful' → *Hanako-san wa o-utukusii* (Hanako-HON TOP HON-beautiful).

### 1.5 Humbling Forms

One may show deference toward a superior by humbling oneself or one's speech directed toward a superior. A fair number of languages have humbling first-person pronominals.

The ordinary Thai first-person pronoun *chan* is replaced by *phom* or by the even more humbling form *kha* '(lit.) servant' or *kha cau* '(lit.) master's servant.' Korean *na* 'I' can be replaced by the humbling form *co*. In letter writing, a Japanese male may humble himself by referring to himself by the Chinese derivative *syoo-sei* '(lit.) small person.' In fact, the Japanese epistolary style contains a whole series of honorific/humbling noun pairs adopted from Chinese; e.g., *rei-situ* '(your) honorable wife': *gu-sai* '(my) stupid wife,' *gyoku-koo* '(your) splendid article': *sek-koo* '(my) humble article.'

Less common are humbling verbal forms, which are sometimes called 'object honorifics,' because they express deference toward the referents of nonsubject nominals by humbling the actor's action directed toward them. The Japanese humbling forms include both suppletive verbal forms, e.g., *sasiageru* and *o-me ni kakaru* for *yaru* 'give' and *au* 'meet,' respectively, and a circumlocution, the latter being quite pervasive. The humbling circumlocution involves (a) the prefixation of the nominalized verbal form by the prefix *o-*, and (b) the verb *suru* 'do.' This converts the plain form *Watasi wa Tanaka-kyoozyu o tazune-ta* (I TOP Tanaka-professor ACC visit-PAST) 'I visited Professor Tanaka' into *Watasi wa Tanaka-kyoozyu o o-tazune si-ta*.

Tibetan also has a number of suppletive humbling forms of verbs; e.g., *thugs* 'meet' → *mjal*, *ster* 'give' → *phul*. *Nga pa-pa dang thugs byung* (I father.PLAIN with meet PAST) 'I met (my) father (plain)' → *Nga pa-lags dang mjal byung* (I father.HON with meet.HUM PAST) 'I met (my) father (humbling).'

Subject honorification and the humbling processes are controlled by the referents of different nominals—the former by the subject nominal and the latter by the nonsubject nominal—and thus they can be in theory combined. Indeed, such a combination appears possible in Tibetan (Kitamura 1974). As in the above example, the word *mjal* ‘meet’ is the humbling form expressing the speaker’s deference toward the person to be met. As discussed in Sect. 1.4, *gnang* is the productive subject honorific form. The combination of the two, *mjal gnang*, thus expresses the speaker’s deference to both the person who is meeting someone and the one who is met; e.g., *Pa-lags sku-mdun dang mjal gnang song* (father.HON Dalai Lama with meet.HUM HON PAST) (‘My) father met Dalai Lama (humbling-subject honorific).’ In the case of Modern Japanese, however, such a combination of a subject honorific form and a humbling form is generally avoided, and, when the occasion arises, simply a subject honorific form alone is used; e.g., *Tanaka-kyoozyo ga gakubu-tyoo ni o-ai ni natta* (Tanaka-professor NOM dean DAT HON-MEET DAT became) ‘Professor Tanaka met the dean (subject honorific).’

## 2. Addressee Honorifics

Addressee honorifics are those forms that show the speaker’s deference toward the addressee. In the case of honorific second-person pronouns, the reference honorific function and the addressee honorific function converge, but certain languages have special addressee-oriented honorific forms.

Perhaps the most familiar is the use of *sir*, *ma’am*, etc. in English as in, *Yes, sir* or *Thank you, ma’am*. Many languages mark addressee honorifics by the use of particles; e.g., Tagalog *po*, Thai *kha* (female), *khraph* (male), Tamil *nka*, *lii*.

More elaborate systems are found in Korean and Japanese, both of which have special verbal endings. Korean attaches the suffix *-sumni* and Japanese *-mas*.

Notice that subject honorifics and addressee honorifics are again two independently parameterized systems, and therefore that one can, in principle, occur independently of the other. Thus, the Japanese subject honorific form *Tanaka-kyoozyu ga ika-re-mas-u* (Tanaka-professor NOM GO-S.HON-PRES) ‘Professor Tanaka goes’ can be used by itself between two students. One can then combine the subject honorific ending *-(ra)re* (S.HON) with the addressee honorific ending *-mas* (A.HON), when the same sentence is uttered toward a respected person; *Tanaka-kyoozyu ga ika-re-mas-u* (Tanaka-professor NOM go-S.HON-A.HON-PRES). When the subject referent is not appropriate for showing the speaker’s respect, only the addressee honorific form can occur as in: *Watasi ga iki-mas-u* (I NOM go-A.HON-PRES) ‘I go.’

In Japanese, even further respect toward the addressee can be shown by the use of humbling verbal

forms. The last sentence above can be made even politer by suppling the verb *iku* ‘go’ by the humbling equivalent *mairu* as, *Watasi ga mairi-mas-u*.

## 3. Avoidance Languages

The use of honorific forms may be conditioned by those who are in the vicinity, especially when a respected person being talked about is within earshot. Thus, a Japanese student who normally utters a plain form such as *Sensei ga ki-ta* (teacher NOM come-PAST) ‘The teacher came’ might use the subject honorific form *Sensei ga ko-rare-ta* when he notices the presence of the teacher in question.

Much more regulated forms of bystander honorifics are seen among the Australian aboriginal languages. The variation of language, known as the ‘mother-in-law’ or ‘brother-in-law’ language, is used specifically in the presence of certain ‘taboo’ kins.

In the case of the ‘mother-in-law’ language of Dyirbal, a speaker must switch from the ‘everyday’ language, Guwal, to the ‘mother-in-law’ language, Dyalnguy, when a taboo relative, e.g., a parent-in-law of the opposite sex, appears within earshot. Dyalnguy is in fact part of the avoidance behavior between certain taboo relatives that was once strictly observed in Australian aboriginal societies. A son-in-law avoids speaking directly to his mother-in-law, while the mother-in-law must use Dyalnguy in speaking to her son-in-law (Dixon 1972).

In Guugu Yimidhirr society, a male ego and his mother-in-law cannot speak to each other directly, and, accordingly, the avoidance language is more like a ‘brother-in-law’ language, for it is used typically when one speaks his brother-in-law or father-in-law (Haviland 1979).

The avoidance language has an honorific function as well. In Guugu Yimidhirr, the brother-in-law language is a language to be used with certain kins that must be treated with respect. It is spoken slowly in a subdued voice accompanied by a behavioral pattern of avoidance of facing the addressee directly, e.g., by sitting sideways with some distance maintained. The Guugu Yimidhirr brother-in-law language also has linguistic features of honorific languages. For example, the everyday second-person plural pronoun *yurra* is employed as a second-person singular pronoun, as in the case of Russian *vy* and French *vous*. Honorifics often neutralize semantic distinctions made in ordinary words, and so does the Guugu Yimidhirr brother-in-law language. The polite second-person pronoun *yurra* ‘you’ neutralizes the distinctions among the singular, the dual, and the plural forms. With various suppletive forms, certain brother-in-law expressions show a marked difference from the every-day language: e.g., *Nyundu buurraay waami?* (you water found) ‘Did you find water?’ (everyday) → *Yurra wabiri yudurrin* (you water found) ‘Did you find water?’ (brother-in-law).

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Speech behavior involving avoidance languages is akin to that of honorifics languages like Javanese and Japanese in three other respects. Voice modulation is also in seen in Javanese honorific speech, where 'the higher the [honorific] level one is using, the more slowly and softly one speaks (Geertz 1968: 289). In the feudal society of Japan, inferiors were not permitted to speak to their superiors of the highest rank in close proximity to them. Emperors received courtiers behind a bamboo screen, and warlords were addressed by vassals of lower rank from some distance away. Avoidance of superiors is also manifested in the use of second-person pronouns and names. In languages like Japanese, Korean, and Dzongkha the use of second-person pronouns is avoided in addressing superiors. Japanese, for example, has a polite second-person pronominal form *anata* or even more honorified form *anata-sama*, but these can never be used in addressing a superior; the latter is marginally usable in a highly impersonal situation. Likewise, in Japanese and many other societies (e.g., traditional China, Igbo), the given names of certain superiors cannot be used in addressing by inferiors.

One of the parameters that determines the use of honorifics is the social and psychological distance between the interlocutors (see Sect. 7). The avoidance languages of Australia and similar speech behaviors in honorifics languages point out clearly this correlation, which is often reinforced by physical distance.

### 4. Beautification

Japanese has extended the honorific prefixes *o-/go-* to other uses where no respect for the referent, e.g., the possessor of the designated object, or for the addressee is intended. Thus, one may attach the prefixes to the nouns designating what belongs to the speaker or to no particular person; e.g., *watakushi no o-heya* (I GEN HON-room) 'my room,' *o-biiru* 'beer,' *o-nabe* 'cooking-pot.' This particular use of honorific prefixes is simply motivated by the speaker's demeanor (see Sect. 7.1) and is called *bika-go* 'beautification language' in Japanese. The form is typically used by women, and accordingly those nouns that take beautification prefixes typically designate domestic matters such as household goods and foods.

Though beautification prefixes are not strictly honorifics because they beautify even those nouns designating objects belonging to the speaker, their honorific origins are not entirely obliterated. One cannot use the prefixes to those nouns designating highly personal objects belonging to oneself such as body parts. Even those who are prone to use beautification prefixes excessively would not use words such as *o-yubi* 'finger' or *o-asi* 'leg' in reference to their own fingers or legs, while they are perfectly appropriate as honorific forms used in reference to a respected possessor.

### 5. Form of Honorifics

Though the specific forms of honorifics vary considerably—some involving suppletion, while others involve affixes or particles—one can detect a certain general tendency in the formation of honorifics. The most basic characteristic is that honorific expressions avoid direct attribution of an action to the respected person or sometimes to the speaker—out of humbleness in the latter case. Avoidance of speaking or avoidance of using second-person pronouns (Sect. 3) is an extreme case of this. But many languages use a special device for blurring an identity of an actor as a means of avoiding directness of expression.

The most widely adopted method of blurring or defocusing an actor is in terms of oblique referencing, which takes a number of forms. Less common than pluralization (discussed below) but an occasionally observed way of avoiding direct reference is the use of locational nouns and deictic expressions (see *Deixis*). The Japanese second-person pronominal *anata* 'you' has its etymology in the archaic expression *anata* 'yonder.' But since this form has been fully grammaticized as a second-person pronominal, and since Japanese tends to avoid using second-person pronominals (Sect. 3), the form *o-taku* 'HON-house' is often used as an honorific replacement for *anata*.

Shifting person is another method of oblique referencing, as observed in Italian; *Lei va?* (she go) 'You (honorific) go?'

The most popular method of oblique referencing is in terms of shifting number from the singular to the plural. The polite plural pronominal forms seen in Sect. 1.2 are a case in point. Regarding the evolution of the honorific second-person plural forms in European languages, Brown and Gilman (1960) refer to a theory that attributes the polite use of the Latin plural form *vos* to the existence of the two emperors in the fourth century—one in Constantinople and the other in Rome. But the widespread use of plural forms as second-person honorific pronouns in diverse languages such as Ainu (*Ainu*), Tagalog, Turkish, Guarijio (North America), and Guugu Yimidhirr indicates that the plurality in form has no direct connection to the concept of two or to royalty. Pluralization is simply a favorite way of defocusing the identity of an actor across languages.

Of course, only those languages that make a singular/plural distinction can exploit this method of agent defocusing. Indeed, if a language has plural verb forms, they may also be utilized as a means of subject honorification. For example, Ainu has plural verb forms, which express the plurality of the affected object or the actor, and these plural forms may be used to express deference toward the referent of the subject nominal. The plural verb form *kor-pa* (have-PL) may mean either 'He/they have a lot of things' or 'He has something (honorific).' Turkish also exploits the plural verb forms for honorific purposes; e.g.,



*Eşiniz daha gelmedi-ler mi?* (wife.your(HON) still arrive-PL Q) 'Has your (honorific) wife not yet arrived (honorific)?,' *Ali Bey oradalar mı?* (Ali-HON there-PL Q) 'Is Ali (honorific) there (honorific)?'

In the case of European languages, the role of plural agreement in the verb is not entirely clear. In languages such as German and Russian, the choice of second-person plural subject forms for an honorific purpose automatically triggers verbal agreement; e.g., Russian *Vy* (PL) *videli* (PL) 'You saw.' The question is whether the plural verb form, independently of the plural pronouns, can be used as a mark of subject honorification. There are some indications that in some European languages, plurality in the verb by itself marks subject honorification, just as in the Turkish case above; e.g., *Dziadek* (SG) *widza* (PL) 'Grandfather sees (honorific)' (Polish dialects, Comrie 1975), *Sind* (PL) *der Herr* (SG) *schon bedient?* 'lit.) Are the Sir already served?' (variety of German, Wolfgang Dressler, personal communication).

Some languages create a sense of oblique referencing by shifting case marking from the ordinary forms to special oblique markers. Korean particles *k'e* and *k'eso* are special honorific dative and ablative (archaic) particles, respectively. Japanese epistolary style replaces the normal nominative case particle *ga* for the subject nominal by the dative particle *ni* as a way of showing respect to its referent.

The passive construction effects agent defocusing, and an honorific expression is often derived in the development of the passive from the middle/spontaneous, as in the case of the Japanese subject honorific suffix *-(ra)re*, or in the development of the passive from the indefinite person construction, as in the case of Indonesian, where the passive prefix *di-*, which goes back to the third-person plural marker, also derives an honorific verbal form; e.g., *Silakan di-minum* (please HON-drink) 'Please drink.'

Circumlocution-type honorifics observed in Japanese object honorific and humbling forms are another way of avoiding direct attribution of the action to the respected agent or to the speaker (see Sects. 1.4 and 1.5). Shifting tense from the present to the past in polite speech, as observed in English, e.g., *Can you ... ?* → *Could you ... ?*, *Will you ... ?* → *Would you ... ?*, is analogous in method to oblique referencing and the circumlocution honorifics discussed here.

Honorific forms are marked as secondary forms, as they tend to be signaled by additional affixes or particles. The secondary nature of honorifics is seen even in suppletive forms from the fact they often do not make as fine semantic distinctions as the ordinary words. For example, the suppletive form *irassyaru* in Japanese obliterates the distinctions among *iru* 'be,' *iku* 'go,' and *kuru* 'come.' The Tibetan subject honorific form *gnang* and the humbling form *phul* neutralize the distinctions made among the ordinary words *sprad* 'hand over,' *ster* 'give,' and *btang* 'send.'

Finally, to a considerable extent honorific expressions are iconic to the relevant social and psychological distances: the longer the form, the politer the expression. In the case of avoidance languages and some honorifics languages, physical distance accompanies honorific speech (see Sect. 3).

## 6. Distribution and Development of Honorifics

Among the various honorific forms, certain types are more widely observed than others, and historically certain forms change their category from one type to another. Synchronic distribution and historical development seem to be correlated to a great extent. Referent honorifics are more widespread than addressee honorifics, and among referent honorifics, subject honorifics are more widely distributed than humbling, nonsubject honorifics.

The fact that referent honorifics are more widespread than addressee honorifics may seem strange in view of the fact that in conversation the addressee is more directly involved than nominal referents and is accordingly expected to be a likelier target of the speaker's deference. However, the referent honorific system serves the function of the addressee honorific system when the subject referent and the addressee converge, as in the expression of *Are you leaving now?* Thus, a reference honorific system is a useful system that allows the speaker to express his deference not only to a third-person referent but also the addressee as well.

Whereas Japanese, Korean, Thai, and Javanese have both reference and addressee verbal honorifics, languages such as Tibetan and Dravidian languages appear to have only well-developed reference verbal honorifics. Unlike Japanese, Korean does not have a systematic humbling, or nonsubject, honorific system, and even among the Japanese dialects, e.g., Miyazaki, there are many that lack a systematic humbling verbal mechanism.

In the diachronic dimension, the history of Japanese reveals that referent honorifics were more prevalent than addressee honorifics in eighth-century Japanese. Subject honorifics often give rise to humbling verbal forms, which in turn supply new addressee honorific forms.

## 7. Use of Honorifics

A more challenging aspect of the study of honorifics perhaps is the description of the actual use of honorifics in speech situations; e.g., who uses them, whom they are used in reference to, and what their functions are in communicative interaction. Since addressing these issues requires knowledge of actual speech situations in some detail, the focus here is on a single language, namely Japanese. But preliminary remarks on some general concepts are in order.

In the case of the avoidance languages of Australia (Sect. 3), their use seems to be controlled rigidly

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according to the tribal membership and genealogical relationships that determine for each speaker which kinsmen (e.g., mother-in-law, brother-in-law) are taboo and which are to be avoided and treated deferentially. Notice again that the notions of avoidance and of deference converge in the use of a special language. Indeed, the use of honorific speech in general is controlled by the social and psychological distance among the interactants.

### 7.1 Power and Solidarity

Brown and Gilman (1960), in a seminal work in this area, have identified two factors of 'power' and 'solidarity' that determine social and psychological distance relevant to the use of honorific speech. Power, as determined in each culture according to social class, age, sex, profession, etc., establishes the superior-inferior relationship that characterizes a vertical social distance—the greater the power difference is, the greater the social distance is. Solidarity, on the other hand, determines a horizontal psychological distance. Those having the same or similar attributes (e.g., power equals, members of the same family, profession, or political persuasion) are solidaristic or intimate and short in psychological distance, whereas those that do not share attributes (e.g., power unequals, strangers) are distant. Brown and Gilman have shown that these two differently defined parameters of distance are correlated with the use of pronouns in European languages (e.g., French *tu* vs. *vous*, German *du* vs. *Sie*). Since Brown and Gilman (1960), the former, plain forms are customarily referred to as 'T-forms' and the latter, honorific forms as 'V-forms' in the literature.

Power-based honorifics and solidarity-based honorifics show difference in the reciprocity of the forms used between the interactants. As in the case of German *du* used among intimates and *Sie* used between strangers, the solidarity-based honorifics are formally symmetric or reciprocal, whereas a strictly power-based system is nonsymmetric or nonreciprocal in that the inferior is obliged to use the honorific forms (the V-forms) toward the superior, who returns the plain forms (the T-forms). Brown and Gilman show that in the case of T/V variation in Europe, it was largely controlled by the power relationship until the middle of the nineteenth century, while in the twentieth century solidarity has become a dominant factor.

### 7.2 Power-based Honorific Pattern

Japanese honorific speech shows both power-based and solidarity-based aspects. Where superiority is fairly rigidly determined as in a business organization, where the rank and age difference are major determinants of superiority, the power-based, nonreciprocal pattern is observed; an inferior consistently uses honorifics toward a superior. A superior might thus invite his subordinate for a drink by using plain

form, (1) *Konban nomi ni ikoo ka* (tonight drink to go Q) 'Shall we go drink tonight?' The subordinate must reply in the addressee honorific form as (2) *Ee, ikimasyoo* (yes go-A.HON) 'Yes, let's go,' and never reply in the plain expression (3) *Un, ikoo* 'Yeah, let's go,' which is appropriate to his inferior or equal. When the subordinate asks his superior out, the reverse pattern obtains; the subordinate cannot use (1) and must use its addressee honorific version, (4) *Konban nomi ni ikimasyoo ka* 'Shall we go drink tonight?' and his superior is most likely to reply with the plain form (3).

As far as the inferior is concerned, this pattern of exchange must be maintained even if he and his superior are quite intimate and can converse quite informally. The mutual use of plain speech between non-equals is permitted only in an unusual circumstance like during the late hours of a drinking party, when all the formalities might be done away with.

### 7.3 Solidarity-based Honorific Pattern

Whether or not a superior uses honorifics toward an inferior depends on a number of factors. Among them, a major factor is psychological distance or degree of intimacy. Though one occasionally witnesses the use of plain or rough speech motivated by power on the part of the superior, it is becoming increasingly rare in contemporary Japanese society to see the power-based use of plain form—a major exception being a scene of conflict or dispute between power-unequals, e.g., between an angry customer and a sales clerk. This trend is due to several factors.

Thus, when a superior uses plain forms towards his intimate subordinate, it is a mark of intimacy, whereas his use of honorific speech creates a distance and is a sign of formality. In other words, a superior's use of honorifics is solidarity-based (but see Sect. 7.4); honorifics are used (as in sentence (4) above) when a superior and his subordinate are not very intimate, while plain speech (e.g., sentence (1)) is directed toward the subordinate as a sign of solidarity, whereby the sense of camaraderie is engendered. Notice, however, that between power-unequals, only a superior has the option of using plain forms—inferiors must always use honorifics—unlike the mutual T-form exchanges in Europe.

Even in Europe, it is power superiors who can initiate the reciprocal T.)

Between power-equals, the plain/honorific variation is by and large controlled by the solidarity factor; plain forms are used among intimates to confirm camaraderie, while honorifics are used between less familiar persons and strangers as a means of keeping psychological distance, by way of which the addressee's personal integrity is honored (but see Sect. 7.4).

In the majority of contemporary Japanese households, the solidarity factor has primacy over the power factor, and thus parents and children and elder siblings and younger ones also exchange plain forms,

much like the use of *du* within the contemporary German family. This is one linguistic manifestation of the Western egalitarian ideology, which was introduced to Japan in the middle of the nineteenth century and which spread throughout the country after World War II.

China has witnessed perhaps the most dramatic effect of the egalitarian ideology on honorifics. The socialist revolution in 1949 and the cultural revolution of the 1960s wiped out the traditional social classes, and with the demise of the aristocratic and the elite classes, once-flourishing honorifics too were all but obliterated.

The other manifestation of the egalitarian ideology is the use of honorifics on the part of power superiors, as described above. Even Emperor Akihito of Japan uses honorifics when he addresses an ordinary citizen. Thus, the egalitarian ideology has facilitated the growth of reciprocal solidarity-based use of honorifics in Japanese as well.

But the reciprocal speech pattern can in principle go in either direction; toward the symmetrical honorific pattern or toward the symmetrical nonhonorific, plain pattern. As noted above, Chinese has taken the path to the latter. Besides the solidarity factor discussed above, there seems to be another prevailing factor at work in those languages that display the reciprocal honorific speech pattern.

#### 7.4 Demeanor

In some Japanese families, especially between husband and wife and/or between parents and adult children, daughters in particular, nonreciprocal plain/honorific exchanges can be observed. But the motivation for such an exchange seems hardly to be power-based. Instead what underlies speech patterns observed in those families is the idea of proper language usage, which prescribes that superiors be treated deferentially through honorific speech. After all, honorifics are consciously taught and learned by the Japanese with this kind of prescriptive idea. This conscious teaching and learning of honorifics and their historical connection to the nobility has produced a situation in which appropriate honorific usage is regarded as a mark of good breeding.

The use and nonuse of honorifics as indications of class membership has the effect of making the use of honorifics part of the speaker's self-presentation effort, an aspect of what sociologist Goffman (1956) calls 'demeanor.' That is, while correct honorifics usage has the effect of paying respect to the addressee, it is at the same time a way of presenting the speaker himself as a cultivated person of good demeanor.

The demeanor aspect of honorifics usage also has the effect of producing the reciprocal honorific speech pattern, for speakers who have the prerogative of using either plain or honorific speech, as in the case of the Emperor, or power superiors in the business

world, or professors in academic life, may constantly use honorifics as a way of self-presentation. An extreme manifestation of this in Japanese is the excessive use of the beautification prefixes *o-/go-* by women (Sect. 4), whereby the level of politeness is consciously elevated to an absurd level at times.

#### 7.5 Formality

Though this article has tried to isolate and delineate those factors that determine the use and nonuse of honorifics, they do not in reality occur in isolation. In an actual speech situation all these factors that control speech form are typically compounded. Take the notions of solidarity and of demeanor discussed above. When a woman shops in an elegant boutique in Ginza in downtown Tokyo, she is likely to use honorifics, as in *Motto ookii no o-ari ka sira?* (more large one HON-have Q wonder) '(I) wonder if (you) have a larger one? (honorific),' as opposed to a plain form such as *Motto ookii no aru?* (more large one have Q) '(Do you) have a larger one? (plain),' which might be used when she is shopping in a neighborhood grocery shop. Here, it is that both solidarity and demeanor factors are at work. In addition, the formality factor involved in the former situation cannot be ignored.

Formality overrides all the considerations discussed above and requires the use of honorifics on the part of all the concerned parties. Thus, power-equal colleagues, who normally exchange plain forms, would exchange honorifics in a formal meeting or on ceremonial occasions. Other factors contributing to the formality of the speech setting include the nature of the topic of conversation and the turns of conversation that occasion formality such as opening and closing of a new topic.

One clear instance where the formality factor alone dictates the use of honorifics is letter writing. Letter writing is a formal activity, being associated with a long history of a variety of epistolary styles, and it triggers the use of honorifics even if the letter is addressed to an intimate person. For example, a son, who usually uses plain forms to his mother, would write to his mother in the honorific style: On the telephone, he would say to his mother *Raisyuu kaeru yo* (next week return PART) '(I'll) come home next week, all right? (plain),' but he would write, *Raisyuu kaeri-masu* in the addressee honorific style.

#### 7.6 Relativity of Social Distance

One final characteristic of Japanese honorific usage to be discussed here has to do with the relativity of the social distance of a nominal referent. The use of both subject honorifics and humbling forms is essentially determined by the social and psychological distance between the speaker and the nominal referent as described above. One would use a subject-honorific form when the subject referent is a superior or a

humbling form when one's action is directed toward a superior. When this kind of pattern is absolutely maintained, regardless of the nature of the addressee, as in the case of the Korean honorific system, then a so-called absolute honorifics system exists. The Japanese honorific system differs from this in that the group identity of the addressee enters into the picture of proper honorific usage.

Japanese society makes a rather clear division between those who belong to one's social group and those who are outside. With respect to outsiders, insiders are treated as an extension of oneself. One consequence of this in regard to honorifics usage is that, with respect to outsiders, status differences among the members of a given social group are obliterated and members are identified with the status of the speaker. Accordingly, when speaking to an outsider, one would not use honorifics with respect to a member of one's social group, e.g., family members, colleagues in a business firm; humbling forms would be used instead even with respect to the superior's action. For example, a secretary would normally use honorifics with respect to her boss when she speaks to her colleagues, as (1) *Syatyoo wa soo ossyatte imasu* (company-president TOP SO say.S.HON be.A.HON) 'The company president says so (subject honorific, addressee honorific).' But when she is speaking to someone from outside her own company, she would treat her boss as if he were herself and would use humbling forms, as (2) *Syatyoo wa soo moosite orimasu* (company-president TOP SO say.HUM be.HUM.A.HON) 'The company president says so (humbling, addressee honorific).'

Thus, in Japanese, with its relative honorifics system, the interpretation of honorific value is not as straightforward as in absolute honorifics languages like Korean and Tibetan, in which the (1)-type honorific form is consistently used regardless of the addressee. That is, in Japanese, the interpretation of the honorific index (see Sect. 8) must take into account not only the usual relationships among the speaker, the nominal referent, and the addressee, but also whether the addressee is an insider or outsider with respect to the speaker's social group.

## 8. Conclusion

Human interaction is facilitated by minimizing conflict between interactants. One of the ways in which conflict arises is by mistreating people such that they feel their personal integrity is threatened, that the expected camaraderie is not confirmed, or that the deference their social standing has earned them has not been paid. Potential conflict is therefore removed when clarification of the relationships of the involved parties is made, and when they are maintained and reinforced with attendant protocols throughout an interaction.

Human behavior, verbal or otherwise, is polite to the extent that it satisfies these requirements for facile

interaction. Honorifics permit the speaker to express his relationship to the addressee and the nominal referents in a highly codified manner. They indicate a speaker's recognition of the power and personal integrity of the person spoken to or talked about, and conversely they indicate a speaker's social and psychological position in relation to the involved parties. Thus honorifics remove potential conflict and facilitate communication. It is precisely because of this function of honorifics for smooth communicative interaction that they instantiate a prototypical case of politeness phenomena of language use, and this in turn inspires a study of honorifics within the framework of general theories of linguistic politeness, a field gaining increasing attention thanks to works such as Lakoff (1975) and Brown and Levinson (1987).

Apparently all languages, regardless of the degree of elaboration in the honorifics system, have ways of making speech behavior polite. An interesting issue therefore is what difference, if any, possession of a highly elaborate honorifics system entails in the communicative function of languages. The relevant research, such as Hill, et al. (1986), indicates that honorifics languages are more strongly indexical than those languages like English that lack an elaborate honorifics system. That is, different honorific forms are used according to different types of addressee, and thus honorific forms indicate the types of interactants. Hill, et al. (1986) show that American students use the same expression of *May I borrow your pen?* to fairly diversified categories of people, such as professors, strangers, physicians, and store clerks. On the other hand, Japanese students would use the super-polite form *Pen o okarisitemo yorosii desyoo ka* '(lit.) Is it all right if I humbly borrowed your pen?' specifically to their professors, while using the middle-level polite form *Pen o kasite itadake masu ka* '(lit.) Is it possible that you give me the favor of lending me your pen?' for a class or people including strangers, physicians, store clerks, etc. Clearly the Japanese students' speech form sets their professors apart from other categories of people they interact with, reflecting the distinct status that the Japanese students, unlike their American peers, accord to their professors. In other words, the most elaborate honorific expression indexes the occasion in which the most relevant power superior is involved.

This kind of indexing function of honorifics is much more clearly seen in those languages in which speech levels are more rigidly determined in relation to speech situations. A given speech level, called 'register' precisely for the reason being discussed here, in such a language indicates clearly what sort of interaction is involved. For example, Javanese has as many as ten speech levels, and each register indicates the nature of interactants (Sakiyama 1989). For example, the low, ordinary style (*Ngoko lugu*) is used when elders address younger ones or between intimate



friends. The middle style (*Madya ngoko*) is used among female itinerant merchants, among country folk, and when the nobility address their subordinates. The highest form (*Krama inggil*), on the other hand, is used when a superior is to be treated with special deference (see also Geertz 1968).

Honorifics, in sum, convey the social meaning as opposed to referential meaning a sentence is normally understood to express. They indicate, among other things, the social categories of the people with whom the speaker is interacting. This in turn has the effect of making the speakers of an honorifics language more attentive to those factors (e.g., age, wealth, occupation, family background) that determine the categories of people. The speaker must ascertain quickly what kind of people he is dealing with so as to choose honorific forms appropriate to his interactants. Thus the presence or absence of an elaborate honorifics system may have a rather profound effect upon how people perceive their environments and how they structure their communicative strategies.

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## Indirect Speech Acts: Inferring the Illocutionary Point

K. Allan

A speech act is created when speaker/writer S makes an utterance U to hearer/reader H in context C. This entry examines 'indirect' speech acts. Suppose S<sub>1</sub> utters (1) in C<sub>1</sub>, where it answers the question *What's the time?* (1):

It is 7.45. (1)

Many scholars would call this a 'direct' speech act, because in uttering (1) S<sub>1</sub> means exactly and literally 'the time now is seven forty-five.' However, (2) is uttered in context C<sub>2</sub>, in which S<sub>2</sub> and spouse H<sub>2</sub> share the car to work, and need to leave home by 7.45 in order to arrive on time.

It's 7.45. (2)

Although this is still a bald-on-record statement of the current time it is often called an indirect speech act because S<sub>2</sub> means at least 'it is time to leave for work';

and it is quite likely that S<sub>2</sub> further implies 'hurry up, you're making us late.'

In indirect speech acts the speaker communicates to the hearer more than he actually says by way of relying on their mutually shared background information, both linguistic and nonlinguistic, together with general powers of rationality and inference on the part of the hearer.

(Searle 1975: 61)

There is overwhelming evidence that speakers expect hearers to draw inferences from everything that is uttered—just as they do from visual and other data perceived and conceived of—no matter how direct. It follows that H will begin the inferential process immediately on being presented with the locution (the language expression used in the utterance. Recognition of the clause-type used within the locution identifies the primary (or initial) illocution in U, but not

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necessarily S's illocutionary point. The inferential process will be exemplified by discussion of (1) and (2).

There is a convention that S has some purpose for choosing to utter  $U_i$  in  $C_i$  instead of maintaining silence or making some other utterance  $U_x$ . H tries to guess this purpose in the course of figuring out the illocutionary point of  $U_i$ , and in doing so will consider  $U_i$ 's relevance to the co-text and setting of the utterance in the light of beliefs about normal behavior in  $C_i$ , beliefs about S, and the presumed common ground. Details of the inferential processes with respect to (1) and (2) are as follows. Step one is for H to recognize S's utterance act. Step two is to use H's knowledge of the grammar, lexicon, semantics, and phonology of English to recognize that S's words *It's 7.45* spoken with a certain pattern of pause, pitch level, stress, and tone of voice, mean 'S says it is seven forty-five.' The third step is to recognize what S's locution is being used to denote/refer to: by 'it' S denotes 'the time'; the tense of the main verb indicates that the time S refers to is the present. H therefore concludes: 'S says the present time is seven forty-five.' Step four is to recognize from H's linguistic knowledge that this meets the description for the primary illocution of a statement in which it is S's reflexive-intention that H believe that S believes that it is seven forty-five. Up to step four, the inferential process for (2) is identical with that for (1); but thereafter it diverges. In step five H seeks to establish S's illocutionary point by relating the primary illocution to  $C_i$ , in order to determine S's apparent purpose in uttering  $U_i$ . In  $C_i$  utterance (1) was issued in answer to the question *What's the time?*, so it is reasonable for  $H_1$  to assume that the primary illocution has identified the illocutionary point because, in saying *It's 7.45*,  $S_1$  has satisfactorily answered the question, and there are no further inferences to be drawn. Turning to utterance (2): in  $C_2$ ,  $H_2$  knows that  $S_2$  has not been asked to tell  $H_2$  the time, therefore  $S_2$  has some personal motivation for drawing the current time to  $H_2$ 's attention;  $H_2$  also knows that  $S_2$  knows that  $S_2$  and  $H_2$  have been getting ready to leave at 7.45 for work.  $H_2$  will therefore conclude that  $S_2$ 's motivation must be that because it is 7.45, it is time to leave for work; in other words,  $S_2$  reflexively-intends  $H_2$  to recognize that 'S<sub>2</sub> is saying it is time to leave for work.' Step six is to decide either that this is the illocutionary point of (2) or that some further inference should be drawn.  $H_2$  may reason that  $S_2$  knows as well as  $H_2$  does that if it is time to leave for work but  $S_2$  and  $H_2$  have not yet done so, then they must hurry. Let's stipulate that in  $C_2$ ,  $H_2$  has grounds for believing that  $S_2$  believes that  $S_2$  is ready to leave for work but  $S_2$  may not believe that  $H_2$  is also ready (this would be made more probable if  $S_2$ 's tone of voice reveals that s/he is irritated). Given this belief,  $H_2$  will conclude that  $S_2$  reflexively-intends (2) to be taken as sufficient reason for  $H_2$  to hurry up because  $H_2$  is delaying their

departure and so making them late. Because there is no further inference to draw,  $H_2$  will conclude that this is the illocutionary point of (2).

It is often assumed that performative clauses (see *Performative Clauses*) express their illocutionary point directly; but the analysis of (1) makes this impossible: the primary illocution of a performative clause is that of a statement (see Cohen 1964; Lewis 1970; Bach and Harnish 1979; Allan 1986). Consider (3):

I promise to go there tomorrow. (3)

Here the primary illocution, corresponding to step four in the previous analysis, is (slightly simplified): 'S<sub>3</sub> is saying that S<sub>3</sub> promises to go there tomorrow.' This is not the illocutionary point of (3), however.  $S_3$  is using this primary illocution as a vehicle for a further illocution to be read off the performative verb; namely,  $S_3$  reflexively-intends the (primary) statement to be a reason for  $H_3$  to believe that  $S_3$  undertakes and intends (i.e., promises) to go there tomorrow. There is no further inference to draw, so this is the illocutionary point of (3). By definition, then, the performative clause in (3) communicates an indirect illocution.

What additional evidence is there that performatives are statements? First, there is the obvious similarity between (3) and (4):

I promised to go there tomorrow. (4)

Unlike (3), which is in the present (nonpast) tense and has the illocutionary point of a promise, (4) is past tense and has the illocutionary point of a statement about a promise made (in the past). The primary illocution of (4) is 'S<sub>4</sub> is saying that S<sub>4</sub> promised to go there tomorrow.' This is not the only parallel with (3), because  $H_4$  will interpret this as follows:  $S_4$  reflexively-intends the (primary) statement to be a reason for  $H_4$  to believe that  $S_4$  did undertake and intend (i.e., promised) to go there tomorrow. There is no further inference to draw, so this is the illocutionary point of (4). Note that the undertaking in both (3) and (4) remains to be fulfilled, and while  $S_4$  is not actually making the promise in (4) as  $S_3$  is in (3), nevertheless, provided all normal felicity conditions hold,  $S_4$  is as much obliged to fulfill the promise reported in (4) as  $S_3$  is in (3). The presumption that the primary illocution of explicit performatives is that of a statement permits a commonsensical account of the similarity and difference between (3) and (4).

Second, there is a distinction between *saying*  $\Sigma$  and *saying that*  $\Sigma$  the former reports locutions, the latter reports statements. Imperatives and interrogatives do not make statements. Compare (5):

Go!	What's your name?	(5)
I said go.	I said what's your name?	
*I said that go.	*I said that what's your name?	
I said that you must go.	I said that I want to know your name.	

In order to be reported by *saying that*, the propositional content of imperatives and interrogatives needs to be recast as a statement; this is not the case with a performative because its primary illocution is that of a statement, for example, (6):

- The beer's cold. I promise to go there.  
 I said the beer's cold. tomorrow.  
 I said that the beer's cold. I said I promise to go there tomorrow.  
 I said that I promise to go there tomorrow. (6)

Third, there is a set of adverbials which modify primary illocutionary acts, e.g., *honestly, for the last time, seriously, frankly, once and for all, in the first place, in conclusion* (see Allan 1986). Consider (7):

- In the first place* I admit to being wrong; and *secondly* (7)  
 I promise it will never happen again.

Example (7) can be glossed: 'The first thing I have to say is that I admit to being wrong; and the second thing I have to say is that I promise it will never happen again.' It is clear that *secondly* denotes a second act of stating, not a second act of promising; from which it may be deduced that *In the first place* identifies a first act of stating, not a first act of admitting. There is no space to consider more than these three arguments; but the evidence is strongly against the view that explicit performatives are direct (= primary) illocutions, because primary illocutions are read off the clause-type

Now consider (8):

- Can you open the window? (8)

Depending on tone of voice and the context of utterance, the locution in (8) could be a question about the openability of the window, about H's ability to open the window, or a request to have H open the window. The primary illocution of (8) is 'S is asking H whether or not H can open the contextually identified window, either right now or in the immediate future.' The next step is for H to relate the primary illocution to the context of utterance in order to determine S's apparent purpose in asking H whether or not H can open the window. S<sub>a</sub> could be asking whether or not H<sub>a</sub> is capable of opening the window. Perhaps if H<sub>a</sub> had sustained some possibly incapacitating injury, S<sub>a</sub> might be asking about H<sub>a</sub>'s strength; but (8) would be an unusually oblique way to ask about someone's physical condition. Imagine another context, C<sub>b</sub>: the weather is so delightful and the room so stuffy that S<sub>b</sub> presumes H<sub>b</sub> would surely have opened the window if it were openable; or perhaps the window is perceptibly screwed shut; in either case the question focuses on the openability of the window rather than presupposing it. Again, suppose S<sub>c</sub> is visiting H<sub>c</sub> in H<sub>c</sub>'s apartment; it is a sunny spring day and the heating is on: S<sub>c</sub> has just walked up three flights of stairs wearing outdoor clothing and has remarked wryly

how warm it is in the apartment. In C<sub>c</sub> it is most likely that S<sub>c</sub> is pre-supposing (a) the openability of the window and (b) H's capability of opening it, so that the illocutionary point of (8) is to get H<sub>c</sub> to open the window. S<sub>c</sub>, who is a guest, has pointedly remarked on the closeness of the room thus implying s/he would prefer cooler, more airy conditions. This will be S<sub>c</sub>'s reason for asking whether or not H<sub>c</sub> can open the window, either right now or in the immediate future. H<sub>c</sub> will conclude that S<sub>c</sub> reflexively-intends (8) to be taken as a reason for H<sub>c</sub> to open the window.

In (8) S uses a formula which questions the possibility for H to open the window—thus expressly giving H the option to refuse—rather than coercing H by using an imperative, which offers no such option. For H to do A it is necessary that H *can* do A—which is why polite refusals state or imply the inability to comply. Asking if H can do A is more tentative than asking if H will do A because a *will* request solicits the cooperative answer *I will*, in which H commits her/himself to complying. The mitigation of a face threat was the reason scholars once gave for the use of indirectness; there appears to have been some confusion between the notion of indirect speech acts, as they have been described here, and the notion of on-record versus off-record speech acts, such as are described by Brown and Levinson (1987). For someone who is not very close to you to respond to the invitation *Do you want to come to a movie tonight?* with the bald-on-record refusal *No* is outright offensive; to avoid giving offence interlocutors hedge, apologize, prevaricate and speak off-record, giving reasons for not accepting the invitation or complying with the request. Thus to refuse the invitation politely one says things like (9):

- I have to wash my hair. (9)  
 I'd love to, but my mother's coming to dinner tonight.

Like most speech acts, the illocutionary point of the utterances in (9) is indirect; but more significantly, these are off-record refusals.

Because all entailments and implicatures of a proposition within U are communicated, they give rise to indirect illocutions that are often, though not necessarily, intended to be communicated. For example, *Woody likes his new job* informs H that 'S believes Woody has a new job,' and S may have made the utterance partly to inform H of this fact. *Who phoned?* informs H that 'S believes that someone phoned.' *My sister's husband*—'S has a married sister.' *Max has one son and two daughters*—'S believes Max has no more than one son and two daughters.' Challenges such as (10) directly seek an explanation for or cessation of the offending act; and indirectly S informs H of S's belief that 'the music (hifi) is loud.'

- { Why } play the hifi so loud? (10)  
 { Must You }

If S likes loud music, and knows or assumes that H does too, s/he would know why the hifi was playing loud and would not have asked (10) but said something supportive (*Great sound! Let's turn up the hifi!*). Therefore, either S believes that H does not like loud music and is seeking an explanation for this uncharacteristic behavior, or—and much more likely—S does not like loud music and is making plain the opinion that 'the music is *too* loud.' A public condemnation like that of the woman at a party who cries out *Mrs Trumpington, will you please ask your husband to keep his hands off me?! broadcasts* (a) what Mr T is doing, (b) a request that he be stopped, (c) S's entailed belief that he will not stop of his own volition. Those are on-record indirect illocutions. Off-record, S indirectly intends not only that Mrs T condemn her husband for sexual harassment of S, but that everyone in earshot should do so too.

The illocutionary point of any utterance is discovered by an inferential process that attends to S's tone of voice and the context of utterance, knowledge of the language itself and of conversational conventions, and perhaps general knowledge. S knows this and speaks accordingly, aware that H—as a competent social being and language user—will recognize the

implications of what s/he says. It is not enough to know a language, one must also know how to use it. Having recognized the existence of the utterance, the inferential process must start with the form; and the primary illocution is read off the clause-type used. The binary distinction 'direct' versus 'indirect' is not fine enough for a proper analysis of speech acts. Because the primary illocution is only occasionally the illocutionary point of the utterance, most illocutions are inferred as 'secondary,' or 'tertiary' illocutions. The last illocution that can be inferred is the (presumed) illocutionary point of the utterance.

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## Information Structure

W. A. Foley

Information structure is the encoding of the relative salience of the constituents of a clause, especially nominals, and is realized as choices among alternative syntactic arrangements. The information structure of a particular clause is determined by the larger sentence or discourse of which it is a part (i.e., its context). The communicative effect of the information structure is to foreground certain aspects of the message of the clause, but to background others. The need to encode information structure is a language universal, but the formal means to do so vary widely across the languages of the world.

### 1. Definition of the Basic Terms: Focus and Topic

English is often referred to as a fixed-order language. This is because changing the word order typically alters the basic meaning of the sentence: for example, *John killed Bill* has quite a different meaning from *Bill killed John*; Russian, on the other hand, is commonly called a free word order language. For example, the sentence *Maksim zaščiščájet Viktora* has the following alternative orders, all of the same meaning (Comrie 1979a):

- |                             |     |
|-----------------------------|-----|
| Maksim Viktora zaščiščájjet | (1) |
| Viktora Maksim zaščiščájjet | (2) |
| Viktora zaščiščájjet Maksim | (3) |
| zaščiščájjet Maksim Viktora | (4) |
| zaščiščájjet Viktora Maksim | (5) |
| 'Maksim defends Viktor.'    | (6) |

In all these sentences *Maksim* is nominative case, indicating it is the subject, while *Viktora* is accusative case, for the direct object. Thus, the word order of Russian can vary freely without changing the basic meaning of which nominal is subject or object. To make that change the case endings must be transposed: *Maksíma zaščiščájjet Víktor* 'Viktor defends Maksim.'

But it is not truly accurate to claim that the word order of Russian is absolutely free. Word order is used by Russian, as well as many other languages, to encode the information structure of the clauses. Each of the above alternatives (1–6) expresses the same meaning, but encodes it within different information



structures; this is made clear by a study of the following mini-dialogues (Comrie 1979a):

- Q: Któ zaščičájjet Víktora? (7)  
'Who defends Viktor?' (8)
- A: Víktora zaščičájjet Maksím. (9)  
'Maksim defends Viktor.' (10)
- Q: Kogó zaščičájjet Maksím? (11)  
'Whom does Maksim defend?' (12)
- A: Maksím zaščičájjet Víktora. (13)  
'Maksim defends Viktor.' (14)

Note that while the answer to both questions can have the same word order in English, this is not possible in Russian. Rather the nominal which provides the answer to the question word always occurs finally in the answer, while the material already established by the question must precede it. The question sets up certain expectations which must be realized in the information structure of the answer. The nominal corresponding to the question word is the *focus* of the clause, expressing the new information which the utterance of the clause is expected to provide, while the remainder expresses what is taken for granted (presupposed). Thus the information structure of both question and answer in the first mini-dialogue could be represented as:

- Q: Presupposed: someone is defending Víktor (15)  
Focus: who is that someone? (16)
- A: Presupposed: someone is defending Víktor (17)  
Focus: that someone is Maksím. (18)

With the exception of question words which always occur initially, Russian has a fairly rigid rule of information structure that presupposed information precedes focused information. Focused information typically occurs at the end of the sentence:

- Presupposed: someone is defending Víktor (19)  
Focus: that someone is Maksím. (20)
- Víktora zaščičájjet || Maksím. (21)  
PRESUPPOSED || FOCUS

The above sentence (21) presents an obvious question as to the information status of the first noun, *Víktora*. This corresponds to the *topic* of the sentence, another notion of information structure best illustrated by mini-dialogues (Comrie 1979a):

- S: Maksím ubívájet Alekseja. (22)  
'Maksim kills Aleksěj.' (23)
- Q: a Víktora? (24)  
'and Viktor?' (25)
- A: Víktora Maksím zaščičájjet (26)  
'Maksim defends Viktor.' (27)

Typically a sentence expresses a comment about some entity. This entity is really what the sentence is about, its presupposed starting point. It is referred

to by a nominal which corresponds to the topic of the sentence. The topic is presupposed information that the remainder of the sentence comments upon. In Russian, as in many languages, the topic of the sentence always occurs initially. Thus, the initial nominal in the answer in the above mini-dialogue has the following topic-comment information structure (28–9):

- Topic: concerning Boris (28)  
Comment:(he) defends Víktor (29)

Thus, there are two systems expressed in the information structure of the Russian clause, that of *presupposed-focus* and *topic-comment*. The information structures of the final answer in the mini-dialogue (28–9) is (30).

- TOPIC || COMMENT (30)  
Boris || zaščičájjet || Víktora  
PRESUPPOSED || FOCUS

Thus, the basic word order rules that encode information structure of Russian clauses is that topic precedes comment and presupposed information precedes focused information. This typically results in an order with the topic nominal sentence initially and the focus nominal sentence finally. This ordering constraint is often referred to as *functional sentence perspective* in the Slavic grammatical tradition.

## 2. Information Structure in English

Word order in English is strongly determined by syntactic conditions, such as the encoding of grammatical relations like subject and object (Sect. 1). So an important issue is how English indicates information structure. It does it through word order as Russian does. Topic occurs sentence initially and Focus, finally. For example, not all of English word order is rigidly fixed. Some alternatives are commonly found, for example, *today Brian is reading* and *Brian is reading today*, and *the children are playing in the yard* and *in the yard the children are playing*. That these differences encode information structure is apparent from constructing mini-dialogues (31–3):

- Q: When is Brian reading? (31)  
A: Brian is reading || today.  
PRESUPPOSED || FOCUS
- A: ?Today || Brian is reading. (32)  
FOCUS || PRESUPPOSED
- Q: Is Brian writing today? (33)  
A: No, today Brian || is reading.  
PRESUPPOSED || FOCUS

The normal position for focused information in English is sentence finally, as in Russian. English is more flexible than Russian and does allow some deviations from this rule, however, the language does require that this deviation be signaled. Thus, one

## Information Structure

common way in English to encode focused information which is not sentence final is by a high falling pitch on the constituent (sometimes called 'emphatic stress'). Consider (34–9):

Q: Who saw Bill? (34)

A: Bill was seen || by John. (35)  
PRESUPPOSED || FOCUS

A: John || saw Bill. (36)  
FOCUS || PRESUPPOSED

Q: Which one is John? (37)

A: John is || the chairperson. (38)  
PRESUPPOSED || FOCUS

A: The chairperson || is John. (39)  
FOCUS || PRESUPPOSED

Another way of altering the normal English ordering of presupposed information before focused is through *it*-cleft constructions. Thus the meaning of the sentence *Ron ate a sandwich* could be expressed in *it*-cleft constructions, indicating unusual encodings of information structure (40–1):

It was Ron || who ate a sandwich. (40)  
FOCUS || PRESUPPOSED

It was a sandwich || that Ron ate. (41)  
FOCUS || PRESUPPOSED

The relative clauses in *it*-cleft constructions are typically used to reintroduce information already known, but not foregrounded in the present discourse context (Prince 1978). They are presupposed information, but are now being reintroduced and partially highlighted in this context; hence, their appearance sentence finally, the position of focused information. *It*-clefts, contrast with *wh*-clefts, which have the expected ordering of presupposed information before focused (42–3):

The one who ate the sandwich was || Ron. (42)  
PRESUPPOSED || FOCUS

What Ron ate was || a sandwich. (43)  
PRESUPPOSED || FOCUS

Given their different information structure, it should come as no surprise that *wh*-clefts are found in different discourse contexts than *it*-clefts. The relative clauses of *wh*-clefts (presupposed) express information already foregrounded, assumed to be in the hearer's mind at the moment. Hence, they have no need to appear in focus position, in fact, rather properly belong in the topic position they do indeed occupy.

The encoding of the topic-comment information structure in English is complicated by the common sentence initial position for the subject nominal. There is, in fact, a very strong correlation between the concepts of topic and subject in English, a salient typological fact about this language as opposed to Russian. Thus, the typical way to express alternatives

of topic choice is to select different subjects. This is very common in English. For example (44–5):

Tears || streamed down her face. (44)  
TOPIC || COMMENT  
Her face || streamed with tears.

Blood || flowed in the streets. (45)  
TOPIC || COMMENT  
The streets || flowed with blood.

In these two examples the same predicate is used with different subject/topic choices. In other cases different predicates must be used (46–51):

Q: Where is the dot? (46)  
TOPIC || COMMENT

A: The dot || is || inside the circle. (47)  
PRESUPPOSED || FOCUS

A: ? The circle surrounds the dot. (48)

Q: Where is the circle? (49)  
TOPIC || COMMENT

A: The circle || is || around the dot. (50)  
PRESUPPOSED || FOCUS

A: ? The dot is inside the circle. (51)

Any construction in English which affects subject selection also typically encodes the topic-comment information structure. For example, extraposition is a topic-altering device (52–3):

TOPIC || COMMENT (52)  
that John will attend || is certain

TOPIC || COMMENT (53)  
John || is certain to attend

And, perhaps, the most common information-structure encoding device in English (and many other languages) is the alteration between active and passive voice (discussed further in Sect. 5.1), for example (54–5):

TOPIC || COMMENT (54)  
the manager || sacked the pilots

TOPIC || COMMENT (55)  
the pilots || were sacked by the manager (55)

Thus, the immediate discourse context determines the proper choice between active and passive, as with all information-structure alternatives. Consider these mini-dialogues (56–9):

Q: Who saw Bill? (56)

A: Bill || was seen by John (57)  
TOPIC || COMMENT

Q: Whom did Bill see? (58)

A: ? John || was seen by Bill (59)  
TOPIC || COMMENT

The second answer is bizarre because *Bill* is the natural topic, as established by the question. Hence, *Bill* should be subject and the answer is properly in the active voice: *Bill saw John*.

While there is a very close correlation in English between the notions of topic and subject, it is not the case that they are isomorphic; these are clear cases of topics which are not subjects. These are topics occurring sentence initially and preceding the subjects as in (60–2):

TOPIC	COMMENT	
Last night	I saw three movies in town.	(60)
As for John	he is such a clown	(61)
Soukous	I think it's the great African twentieth-century contribution to civilization.	(62)

Such constructions are especially common in informal spoken speech styles. The first example is an ordinary topicalization, while the second and third examples illustrate left-dislocations, in which a pronoun marks the position where otherwise the topic nominal would be found. Left-dislocations are used in English to express a change in topic in discourse, such as when a new topic is introduced which supersedes a previous one (this is especially noticeable with *as for*). Ordinary topicalizations, on the other hand, can be used to present as topic any constituent which is presupposed. It may not be explicitly mentioned previously, but must be presupposed, for example (63–4):

Q: What's your favorite dance music? (63)

TOPIC	COMMENT	(64)
A: Soukous	my feet find irresistible.	

*Soukous*, a type of African dance music, is presupposed by the general cover term 'dance music' in the question.

### 3. Other Means of Encoding Information Structure

Both Russian and English largely employ word order to express information structure, and it is sometimes assumed that this is the natural way to do so. Although a widespread device, used probably by all languages to some extent, word order is superseded in some languages as the primary means to encode information structure by other strategies. One of the most common alternative means is specific morphemes which encode the information-structure function of a nominal. Japanese, for example, has a special postposition *wa*, which makes a topic nominal. (Inoue 1979) (65–6):

Hanoko ni wa Taroo ga hon o watashi-ta (65)  
Hanoko to TOPIC Taroo SUBJ book OBJ give-PAST  
'As for Hanako, Taroo gave her a book.'

Nihon wa Tookyoo ga sumiyoi (66)  
Japan TOPIC Tokyo SUBJ easy to live in  
'As for Japan, Tokyo is easy to live in.'

As in English and Russian, topics in Japanese are set up by the discourse context. Consider this mini-dialogue (67–8):

X: yuube Sakai san ga asobi ni (67)  
last night Sakai Mr SUBJ play to  
ki-mashi-ta yo  
come-POLITE-PT AFFIRM  
'Last night Mr Sakai come for a visit.'

Y: soo des-u ka? Sakai san wa/?ga (68)  
thus be-NON PT QUES Sakai Mr TOPIC/SUBJ  
genki des-u ka?  
healthy be-NOW PT QUES  
'Is that so? Is Mr Sakai healthy?'

Note that *Sakai san* 'Mr Sakai' is simply marked with the subject marker *ga* in *X*, not the topic marker *wa*: hence it is being presented as non topical information, likely the focus of the sentence. But by the *Y* utterance *Sakai san* has been established as topical and so is encoded as the topic with *wa*; it is ungrammatical to simply use the subject particle *ga* in *Y*.

Japanese has a strict separation of topic and focus. A subject which is the focus must be encoded with *ga*; it may never co-occur with a *wa* topic. Consider this mini-dialogue (69–70):

Q: dare gas mado o ake-ta ka? (69)  
who SUBJ window OBJ open-PT QUES  
FOCUS PRESUPPOSED  
'Who opened the window?'

A: watashi ga/?wa ake-ta (70)  
I SUBJ/TOPIC open-PT  
FOCUS PRESUPPOSED  
'I opened (it).'

The focused nominal *watashi* 'I' can only be encoded with the subject marker *ga*; *wa* topic is ungrammatical. Note that the presupposed information *mado o* 'the window' is omitted completely in the answer; this is very common in Japanese, the so-called *zero anaphora*.

Perhaps, the most unusual device for encoding information structure is through verbal agreement affixes, a common feature of Bantu languages and some Papuan languages, like Yimas. Chicheŵa, a Bantu language of Malaŵi and neighboring areas is a good representative of this type (Bresnan and Mchombo 1987). In Chicheŵa an object nominal can function as focus or topic of its clause. As a focused nominal, it may not be crossreferenced by a verbal prefix and must immediately follow the verb, resulting in a rigid presupposed-focus ordering (71–2):

njuchi zi-ná-lum-a alenje (71)  
10 bees 10 SUBJ-PAST-bite-INDIC 2 hunters  
PRESUPPOSED FOCUS  
'The bees stung the hunters.'

\*alenje njuchi zi-ná-lum-a (72)  
2 hunters 10 bees 10 SUBJ-PAST-bite-INDIC  
FOCUS PRESUPPOSED

(The numbers indicate gender classes.) However, an object nominal which is also topic must be cross-referenced with a verbal prefix and then can occur in any position in the clause, the syntactic position of

## Information Structure

the topic in Chicheŵa being free, not fixed sentence initially as in Russian or English (73–4):

njũchi zi-ná-wá-lum-a      ||      alenje      (73)  
10 bees 10 SUBJ-PAST-2 OBJ-bite-INDIC      ||      2 hunters  
COMMENT      ||      TOPIC

zináwáluma alenje njũchi      (74)  
alenje zináwáluma njũchi  
zináwáluma njũchi alenje  
njũchi alenje zináwáluma  
alenje njũchi zináwáluma

Note that *wá-* 2 OBJ indicates that *alenje* ‘hunter’ is the topic of its clause and hence the nominal can occur in any position, as the grammaticality of the six sentences above (73–4) demonstrates. Thus, unlike Russian and English, word order does not encode the topic comment information structure in Chicheŵa; the verbal morphology does.

This analysis is clearly supported by the behavior of questions. Question words, being the focus of the sentence, can never be crossreferenced by a verbal prefix, nor can the focused nominal in the answer (75–8):

Q: mu-ku-fũn-á      ||      chíyáni      (75)  
you SUBJ-PRES-WANT-INDIC      ||      7 what  
PRESUPPOSED      ||      FOCUS  
‘What do you want?’

↓  
(\*mu-ku-chi-fũn-á      ||      chíyáni)      (76)  
you SUBJ-PRES-7 OBJ-want-INDIC      ||      7 what  
COMMENT      ||      TOPIC

A: ndi-ku-fũn-a      ||      chipéwa      (77)  
I SUBJ-PRES-want-INDIC      ||      7 hat  
PRESUPPOSED      ||      FOCUS  
‘I want a hat.’

↓  
(?? ndi-ku-chi-fũn-a      ||      chipéwa)      (78)  
I SUBJ-PRES-want-INDIC      ||      7 hat  
COMMENT      ||      TOPIC

The answer with *chipéwa* ‘hat’ as topic could be acceptable if the speaker was choosing from some articles he/she could see and had decided on one of these objects, the hat. In this case, it is topical by being among the immediate objects of discussion. Otherwise, *chipéwa* ‘hat’ is a focused nominal and may not occur with a crossreferencing verbal prefix.

In questions in which the focused question word is other than the object, it is possible, of course, for the object to function as topic in both question and answer, as in these Swahili examples:

Q: nani      ||      a-na-i-tak-a      ||      nazi      (79)  
1 who      ||      1 SUBJ-PRES-9      ||      7 coconut  
FOCUS      ||      OBJ-want-INDIC      ||      TOPIC  
‘Who wants the coconut?’

↓  
A: nazi      ||      ni-na-i-tak-a      (80)  
7 coconut      ||      I SUBJ-PRES-9 OBJ-want-INDIC  
TOPIC      ||      FOCUS  
‘I want the coconut’

*Nazi* ‘coconut’ is topic in both question and answer. The question might occur when a man is holding a coconut in his hand and offering it to a group of children. It is already the topic of the discourse. One of the children might then answer as above, continuing with the coconut as topic.

## 4. Categories of Information Status

### 4.1 Given versus New Information

Topics are typically presupposed information. They are the starting point of the sentence, what it is about. Focused nominals, on the other hand, are the end goal of the sentence, the information which the speaker intends to introduce into the discourse. Hence the topic tends to occur toward the beginning of a sentence and the focus toward the end. Topics are closely correlated with the given or old information, which is currently in the speaker’s awareness, while focused constituents are new information, just being introduced into the discourse. The concept of given information is more or less equivalent to presupposed, but new information need not (although it usually does) correspond only to the focused constituent.

Q: What happened?      (81)

A: An enormous storm devastated Manila.      (82)

Arguably, all the information in the answer (82) is new, but only the nominal *Manila* is really the focus, as demonstrated by its high falling pitch.

There are other types of mismatches between topic and presupposed/given and focus and new. Some of these are exemplified by contrastive nominals. These are marked like focused constituents by a high falling pitch. Contrastive nominals are typically focused, but presupposed (83).

Considering the suspects, only Egbert has a motive.      (83)

Egbert is one of several suspects in a crime investigation; he is thus presupposed, yet new information is provided about him, as focus, as being the only person among them with a motive. Thus, he is set up in contrast to the other suspects, presupposed but focused. Another example of a focus-presupposed nominal would be in the following sentence (84) in a discourse about dances.

I like the lambada, but Sam likes the cha-cha.      (84)

People who like dancing are presupposed, Sam among them. But he is focused as being unusual in liking the chacha; the goal of the sentence is to communicate this piece of gossip.

There are also examples of topics which are new information. Perhaps the best-known examples of these are found in the opening lines of stories, such as fairy tales (85):

Once upon a time, a little old woman lived in a dark cave.      (85)



*Little old woman* is the topic of this sentence, but as it initiates a discourse, it is *obviously* not given information, but new.

#### 4.2 Referential versus Nonreferential

Besides given/presupposed versus new, nominals may bear other kinds of information statuses, depending on the speaker's view of the listener's knowledge of their referents. A nominal is referential if the speaker intends that it refer to a particular entity in the world. For example, if someone rings a friend and asks *What are you doing?* and the response is *I'm looking for a snake*, the nominal *snake* could be either referential or nonreferential. If the respondent has a particular snake in mind, for example, a pet boa constrictor, then *snake* would be referential as in (86):

I'm looking for a snake. Moses escaped from his cage. (86)

Here, Moses is the boa constrictor's name. If, on the other hand, she/he is lonely and just wants a pet snake, then *snake* would be nonreferential, as in (87):

I'm looking for a snake. I want a new pet. (87)

Pronouns like *I*, *we*, *you*, *they* are typically referential, but at least two, *you* and *it*, have nonreferential uses (88–9):

You pay your money and you take your chances. (88)

It's raining in Melbourne, as usual. (89)

#### 4.3 Definite versus Indefinite

A nominal is mark definite when the speaker presupposes the listener can uniquely identify its referent; otherwise a nominal is indicated as indefinite. So if X goes up to Y and announces *Egbert bought the snake*, the definite article indicates that X presupposes Y knows which snake she/he is talking about. If X does not, X would probably come back with a request for additional information to help identify the referent of *the snake*, such as *which snake?* On the other hand, if X believed that Y had no knowledge of the particular snake, X would have initiated the conversation with the nominal indicated as indefinite: *Heh, Egbert just bought a snake!*

Topic nominals are closely correlated with definiteness and because subject selection is largely equivalent to topic choice in English, indefinite subjects are sometimes impossible. Consider (90–1):

TOPIC		COMMENT	(90)
John		has	a new camera
PRESUPPOSED		FOCUS	

TOPIC		COMMENT	(91)
the/*a new camera		is John's	
PRESUPPOSED		FOCUS	

Note that the variant with the indefinite nominal as subject' and, hence, topic, is ungrammatical.

English, like many languages, has articles to mark the difference between definite and indefinite nominals. Other languages may use other devices. Mandarin, for example, uses word order: definite nominals precede the verb (92), indefinite follow (93) (Li and Thompson 1975):

ši rén le (92)

die person PRF  
'a person has died/someone has died'

rén ši le (93)

person die PRF  
'the person has died'

Other languages may use distinctive case endings to indicate definite nominals. In Iranian, for example, there is a special accusative case, but only if the nominal is definite (Comrie 1979b):

Hasan yek ketāb did (94)

Hasan a book saw  
'Hasan saw a book.'

Hasan ketāb-rā did (95)

Hasan book-ACC DEF SAW  
'Hasan saw the book.'

Personal pronouns like *I*, *you*, and *they* and proper nouns like *Hasan*, *Egbert*, and *Australia* are usually definite; they refer to entities which the speaker presupposes the listener can uniquely identify. There can be exceptions, however; for example, when two people are looking over a map and one says to the other (96):

Hey Sue, I found an Athens in Georgia! (96)

Here, *Athens*, although a proper noun, is indefinite, because the speaker assumes the listener does not have this particular Athens in mind.

The distinction between definiteness and indefiniteness interacts with the two previous definitions discussed. Definite nouns are presupposed and hence typically given information. They can be new, however, as in (97):

Hey, get up! The sun has already come up! (97)

Here *the sun* is new information being introduced for the first time. Yet the speaker treats it as definite, for she/he assumes the listener can uniquely identify the referent: there is only one sun in the real world. Definiteness interacts with referentiality to form all four possible combinations:

- definite and referential: *I'm looking for the snake* (our pet boa constrictor);
- indefinite and referential: *I'm looking for a snake* (my pet boa constrictor just escaped from its cage);
- definite and nonreferential: *I'm looking for the friendliest snake I can find* (I haven't got it yet, but you and I know what kind it would have to be) and
- indefinite and nonreferential: *I'm looking for a snake to buy* (said to a pet store keeper).

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### 4.4 Generic versus Specific

This distinction indicates whether a nominal refers to the entire class of its possible referents or a specific one (98–9):

Snakes are easy pets to care for. (98)

The snake is my favorite among my pets, (99)  
but it keeps escaping.

*Snakes* in the first example is generic; the statement is meant to cover all animals classed as snakes. The nominal *the snake* in the second example is specific, as the sentence only applies to a particular snake, my pet snake. Generic nominals can be definite (100) or indefinite (101–2):

The snake is an easy pet to care for. (100)

A snake is an easy pet to care for. (101)

Snakes are easy pets to care for. (102)

In other languages, the distinction between generic and specific can be realized quite differently. For example, in Fijian specific nominals functioning as direct object co-occur with an article while the verb is overtly marked transitive, while generic nominals are article-less and, further, are incorporated into the verb phrase, so that the verb is formally intransitive (103–4):

e ra gunu-va na wai (103)  
3PL drink-TR ART water  
'They drank the water.'

e ra gunu wai (104)  
3PL drink water  
'They drank water.'

This incorporation of generic direct objects is widely attested crosslinguistically; even English exhibits it: *they went snake-hunting*.

### 4.5 The Animacy Hierarchy

The distinctions of information status for nominals considered above were all established by the discourse context. Now it is time to assess the information status of nominals as determined by inherent properties of their referents, the most significant of which properties is being one of the immediate speech act participants: the speaker or the addressee. Speaker and addressee generally correspond to the personal pronouns *I* and *you*. The traditional definition of a pronoun as a word which stands for a noun is inaccurate in the case of *I* and *you* in that there is no possible nominal for which they stand. The referents *I* and *you* are not constant, but rather they change in the course of an interaction, depending on who is doing the speaking and who is being spoken to. This interplay of the shifting referents of *I* and *you* in the continuing speech act is a fundamental fact of language.

The elements which do fit the traditional definition

of pronouns as the forms which take the place of nouns are the third-person pronouns: in English *he*, *she*, *it*, *they*. These are fundamentally different from *I* and *you*. Whereas *I* and *you* have the present speech participants as referents, a third-person pronoun may refer to any referent, other than the speech act participants. The third person is, in fact, a non person, its possible referents being restricted to non participants in the speech act.

There is a fundamental principle of salience in the system of persons. The speech act participants, speaker and addressee, are more salient than the absent participants of the third person (Silverstein 1976). In some languages the addressee is more salient than the speaker. In other languages the speaker is more salient than the addressee. And, in still other languages, speaker and addressee have equal salience. Many languages make further distinctions between different types of third person nominals. Nominals with animate referents are more salient than those with inanimate referents, and among animates, human referents are the most salient. Some languages make a further distinction among nominals with human referents, with proper nouns more salient than common nouns. Finally, third-person pronouns are generally more salient than full nominals. A hierarchy of inherent salience can be established (105–6):

speaker/listener > third-person pronouns > (105)  
human proper

nouns > human common nouns >  
other animate nouns > inanimate nouns. (106)

The inherent salience of a nominal often determines the packaging of a particular expression. Nominals higher on the animacy hierarchy tend to occupy more prominent syntactic positions than nominals lower on it. Many languages have grammatical systems which are sensitive to the distinctions along this hierarchy. Yimas of New Guinea is one such language: its version of the animacy hierarchy is:

speaker > listener > third-person human > (107)  
animate > inanimate.

In Yimas, grammatical relations like subject and object are signaled by verbal crossreferencing prefixes. These are not in a fixed order: whichever has a referent higher on the animacy hierarchy occurs closer to the verb stem. Consider the pair (108):

na-ka-tay na-ŋa-tay (108)  
3SG OBJ-1SG SUBJ-see 3SG SUBJ-1SG OBJ-see  
'I saw him.' 'He saw me.'

Note that the prefixes for the speaker *ka-* 1SG SUBJ and *ŋa-* 1SG OBJ always occur closer to the verb stem than the prefix for third person *na-*. This is because the speaker outranks third person human in the animacy hierarchy. The same applies if the listener is substituted for the speaker (109):

na-n-tay                      na-nan-tay                      (109)  
 3SG OBJ-2SG SUBJ-see    3SG SUBJ-2SG OBJ-see  
 'You saw him.'            'He saw you.'

And in combinations with the speaker and listener, the prefix for the speaker is closer to the verb stem, as speaker outranks listener on the animacy hierarchy (110):

ma-ŋa-tay                      (110)  
 2SG SUBJ-1SG OBJ-see  
 'You saw me.'

## 5. Voice Alternations for Information Structure

Perhaps the most studied of syntactic devices for encoding information structure are voice alternations like passives and antipassives. They typically cause some major rearrangements of clause structure.

### 5.1 Passive

The usual choice for subject in English (and hence topic), is the actor, the entity performing the action. This results in active sentences for example, (111–12):

The boy ate the sandwich.                      (111)

The keeper fed the python.                      (112)

When the speaker chooses the entity affected by the action, the patient, as subject, he uses a passive construction. The actor then appears in a prepositional phrase with *by*:

The sandwich was eaten by the boy.                      (113)

The python was fed by the keeper.                      (114)

Note that the passive construction diverges from the active in two important respects: (a) the patient is foregrounded in being presented as subject and, hence, topic and (b) the actor is backgrounded, appearing in a prepositional phrase. This corresponds to the two basic functions of passive in English and crosslinguistically: *foregrounding*, in which a non-actor is subject and topic, and *backgrounding*, in which the actor is removed from the forefront of the clause.

Perhaps the most common type of backgrounding passives are agentless passives with no mention of the actor (115–16):

The house was sold from under us.                      (115)

Egbert got robbed yesterday.                      (116)

These are used when the referent or the actor is unknown or the speaker wishes to avoid mentioning them. The impersonal passives of European and other languages also have a backgrounding function, as in these Dutch examples (Krisner 1976):

er    woorden    daar    huizen    gebouwd    (117)  
 there became(3PL) there houses built  
 'There were houses built there.'

er    wordt    door    de jongens    gefloten    (118)  
 there became(3SG) by the boys whistled  
 'There is whistling by the boys.'

These impersonal passives may have overt actors, but they are strongly backgrounded.

Passives are strongly favored when there is a large imbalance between a definite or highly animate patient and an indefinite or lowly animate actor. Because the patient has high information status in comparison to the actor, it is preferred as topic. Hence a passive commonly results (119–20):

I got run over by a bus.                      (119)

Egbert was stung by a bee!                      (120)

Whereas if the actor is of high information status, and the patient, low, passives are marginal at best (121–23):

? A bee was killed by Egbert                      (121)

? A bus was run off the cliff by me.                      (122)

The/? A CD player was lent to me by Dad.                      (123)

The foregrounding function of passives is most apparent when a patient needs to be subject and topic for the purposes of discourse cohesion. Note, if the sentences *Oscar went to the store* and *Oscar saw Bill* are conjoined, they produce (124):

Oscar went to the store and saw Bill.                      (124)

where Oscar as subject and topic of the second clause can simply be omitted. However, if the same exercise is attempted with *Oscar went to the store* and *Bill saw Oscar*, the ungrammatical sentence (125) is produced:

\*Oscar went to the store and Bill saw                      (125)

in which the patient *Oscar* has been omitted. This is impossible: rather the passive must be used to make Oscar subject and topic, and then the conjunction is fine (126):

Oscar went to the store and was seen by Bill.                      (126)

This is an example of the foregrounding function of passive: the patient is made subject and topic in order to meet discourse conditions, in this case, constraints on conjunction.

### 5.2 Antipassives

*Antipassives* are the mirror-image constructions to passives. They most transparently occur in languages in which the usual choice for topic is not actor, as in English, but is the patient (so-called 'ergative' languages). In these languages antipassives are functionally parallel to passives: they indicate that instead of the usual choice for topic, the patient; there is a marked choice, the actor. Dyirbal of Australia is such a language (Dixon 1979a):

TOPIC                      (127)  
 balan dyugumbil bangul yaŋangu buŋa-n  
 fem abs woman ABS MASC ERG man ERG see-PT  
 'man saw women'

## Information Structure

ABSolutive is the case of the topic and the ERGative the case of the actor. Example (127) is the basic sentence type with the patient as the topic choice. If the actor was chosen as topic, then the antipassive construction must be employed:

TOPIC				(128)
bayi	yaɾa	bagun	dyugumbilgu	
	buɾal-ŋa-ŋu			
masc abs	man ABS	FEM DAT	women DAT	
see-ANTIPASSIVE-PAST				
'man saw women'				

Now the actor has the ABSolutive case marking and is topic, while the patient is in the dative case (parallel to the prepositional phrase with *by* in the English passive). Note the verb has an overt antipassive suffix -ŋa(y).

Antipassives further parallel passives in having both foregrounding and backgrounding functions. Suppose the following two Dyirbal sentences (129–30) are conjoined:

TOPIC			(129)
bayi	yaɾa	bani-ŋu	
masc abs	man ABS	come-PAST	
'man came'			

TOPIC				(130)
balan	dyugumbil	bangul	yaɾangu buɾa-n	
fem abs	woman ABS	MASC ERG man	ERG see-PAST	
'man saw women'				

The topics of the two clauses 'man' and 'woman' are not identical so they may not be conjoined in this form. Rather the foregrounding function of the antipassive must apply to the second clause, making the actor 'man' the topic:

TOPIC				(131)
bayi	yaɾa	bagun	dyugumbilgu	
	buɾal-ŋa-ŋu			
masc abs	man ABS	FEM DAT	women DAT	
see-ANTIPASSIVE-PT				
'man saw women'				

Now *bayi yaɾa* 'men' is topic of both clauses and the two clauses can be conjoined, with omission of the topic in the second clause:

TOPIC				(132)
bayi	yaɾa	bani-ŋu		
masc abs	man ABS	came-PAST		
	bagun	dyugumbilgu	buɾal-ŋa-ŋu	
	FEM DAT	women DAT	see-ANTIPASSIVE-PAST	
'man came and saw women'				

Backgrounding antipassives also occur. These typically result in the omission of the patient of the clause with a number of semantic effects. For example, in Yidiŋ (Dixon 1979b) the backgrounding function can imply a generalized action with no specific affected patient or a reflexive action:

TOPIC			(133)
yinu	bunya	buga--dyi-ŋ	
this ABS	woman ABS	eat-ANTIPASSIVE-PRES	
'this woman is eating'			

TOPIC		(134)
wagu.dya	bambi-dyi-ŋu	
man ABS	cover-ANTIPASSIVE-PAST	
'the man has covered himself'		

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## Interjections

F. K. Ameka

Interjections are words which conventionally constitute utterances by themselves and express a speaker's current mental state or reaction towards an element in the linguistic or extra-linguistic context. Some English interjections are words such as *yuk!* 'I feel disgusted,' *ow!* 'I feel sudden pain,' *wow!* 'I feel surprised and I am impressed,' *aha!* 'I now understand,' *hey!* 'I want someone's attention,' *damn!* 'I feel frustrated,' and *bother!* 'I feel annoyed.' Such words are found in all languages of the world. This article surveys the different uses and definitions of the term 'interjection' and the different types of interjections that are found in the languages of the world. It also explores the relationship of interjections to other pragmatic devices such as particles, (see *Particles*), discourse markers, and speech formulae.

### 1. The Definition of Interjection

Interjections may be defined using formal, semantic or pragmatic criteria. From a formal point of view, an interjection is typically defined as a lexical form which (a) conventionally constitutes a non-elliptical utterance by itself, (b) does not enter into construction with other word classes, (c) does not take inflectional or derivational affixes, and (d) is monomorphemic.

This definition characterizes the core members of the interjection class. It captures most of the elements which have traditionally been described as interjections. In many languages this includes (a) words which are used to express emotions such as disgust and its related feelings, for example, English *yuk!*, *ugh!* and *phew!*, German *pfui!*, Dakota *xox!*, Polish *fu!* and *fe!*, Ru *ful!*, and Dan *fyl!*; (b) words and expressions for greetings, leave-taking, thanking, apologizing, etc. (English *hello*, *thankyou*, and *goodbye*, Fre *adieu*); (c) swear words (English *shit!*, Fre *merde!* and *sacredieu!*); (d) attention-getting signals (English *hey* and *psst*, Ru *a'u*, Jap *oi* and *nee*); (e) some particles and response words (English *yes* and *no*, Jap *hai* and *iee*) (f) words directed at animals (English *whoa*) and (g) onomatopoeic (see *Iconicity*) words and iconic (see *Iconicity*) depictives (Polish *sza* 'hush' and *hu-hu* 'boo').

It however excludes some other items, such as

English *well*, which have sometimes been included in the interjection class, because they are not capable of forming independent non-elliptical utterances. Some scholars believe that the formal definition which is essentially the traditional definition is too broad since it encompasses different semantically definable classes such as speech formulae which could be distinguished from the typical interjections on semantic grounds.

From a semantic point of view, prototypical interjections may be defined as conventionalized linguistic signs which express a speaker's current mental state, attitude, or reaction towards a situation. This definition narrows down the class of interjections and excludes onomatopoeic words, for example, which are descriptive rather than expressive.

In terms of pragmatics, interjections are context-bound linguistic signs. That is, they are tied to specific situations and index elements in the extralinguistic context. They cannot be fully interpreted unless they are situated in the appropriate discourse and social context. Being context-bound (i.e., indexical), interjections embody presuppositions about discourse and social context which could be explicated in terms of propositions. For instance, if someone utters the English *ouch!*, s/he indexes himself/herself as experiencing a sudden and sharp pain. Once the speaker is identified, this utterance can be fully interpreted.

The interpretation of other interjections however involves not only contextualization and substitution of elements in the context for arguments in the propositions underlying them, but also complex processes of conversational inference. That is, the arguments, in the propositions underlying the interjections are not fully specified as in the case of *ouch!*. The identity of the arguments are open to context-based inference. For instance, one of the propositions underlying the Ru *porá* as an interjection is 'it is time for someone to do something that is given by the context.' The 'someone' in the proposition can be either the speaker, the hearer, or both. The exact identity of the agent of the action is figured out by inference. It cannot be filled out by a straightforward

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substitution of the contextual elements for the arguments in the proposition.

Closely related to their indexical nature is the fact that interjections are typically and commonly accompanied by physical gestures. For instance, in some languages of West Africa (e.g., Akan, Ewe (Gbe) and Ga-Dangme) there is an interjection *atuu!* which is used to welcome people and is uttered at the same time as the interlocutors hug each other. Sometimes physical gestures may substitute for interjections. For this reason, the boundary between gestures as semiotic signs and interjections as linguistic signs is sometimes hard to draw.

### 2. Characteristics of Interjections

Interjections tend to be phonologically and morphologically anomalous. They may be made up of sounds and sound sequences that are not found in other parts of the language. In English, the interjection spelt 'tut-tut' is phonetically a series of dental clicks—sounds which are not used otherwise in the language. Some English interjections do not contain any vowels, for instance, *pss!*, *sh!* From the point of view of the main sound system of English these are 'non-words.' However phonological anomaly is not a definitive criterion for the class of items because there are other interjections which conform with the patterns of the main sound system (e.g., English *yuk*).

Morphologically, interjections do not normally take inflections or derivations in those languages that make use of such forms. This is one of the reasons why they have been classified together with particles and other uninflected words like adverbs (see *Adverbs and Adverbials*). It should be noted here that some interjections which evolve from verbs (see *Verbs and Verb Phrases*) could carry a particular inflection but they do not obey the agreement rules of the language in question. In other words the inflections together with the verb stem have become frozen and form a completely new word. Notice that although the French form *tiens!* 'look!, hey!, here!, etc.' is homophonous with the second person singular form of the verb *tenir* 'to hold,' *tiens!* is used as an interjection to both singular and plural.

Most interjections are simple monomorphemic words. However some interjections seem to be formally complex. Thus there are multimorphemic ones which constitute a phonological word such as English *Goddammit!* These may be referred to as complex interjections. The French forms of *oh là là!*, *he là!*, and *hop là!* for instance may be included here. Apart from these there are multi-word expressions, phrases, which can be free utterance units and refer to mental acts, for example, English *bloody hell!*, *dear me!* *thank God!*, etc. These utterances may be referred to as interjectional phrases. They usually have peculiar syntax.

Since interjections are words which can constitute utterances by themselves, the term 'interjection' may

be used to describe either a word class or an utterance type (see *Sentence Types and Clause Subordination*). When it is used in reference to a sentence type, it is considered to be a minor sentence type.

### 3. Types of Interjections

There are different ways of classifying interjections. One classification is based more or less on the form of the interjection and the other on the communicative function of the interjection. Along the formal dimension, interjections may be divided into two broad classes: primary interjections and secondary interjections.

Primary interjections are little words or 'non-words' which in terms of their distribution can constitute an independent non-elliptical utterance by themselves and do not normally enter into construction with other word classes (English *Geel!*, *Oops!*, etc., Fre *Aïe!*, *Hem!*, Longgu (Austronesian) *sss* 'I want you here,' and *ggg* 'I feel relaxed').

Secondary interjections are those words which have an independent semantic value but which can be used conventionally as non-elliptical utterances by themselves to express a mental attitude or state. Under secondary interjections fall such alarm calls and attention getters as English *Help!*, *Fire!*, and swear and taboo words such as English *Fuck!*, *Screw!* Fre *Bordel!*, *Chiotte!*, and other words used emotively such as English *Bother!*, *Drat!*, etc.

In terms of their function, interjections can be categorized according to the traditionally recognized functions of language such as expressive, conative, phatic, etc. (Bühler 1934, Jakobson 1960). This functional classification is based on what is perceived to be the predominant function of the item in question with respect to its semantics.

Expressive interjections are vocal gestures which are indicative of the speaker's mental state. They may be subdivided into two groups: the emotive and the cognitive. The emotive ones are those that express the speaker's state with respect to the emotions and sensations they have at the time. (English *Yuk!* 'I feel disgusted'; *Ouch!* 'I feel sudden pain'; Aranda (Australian) *yekaye* 'I feel shocked'). Cognitive interjections are those that pertain to the state of knowledge and thoughts of the speaker at the time of utterance (English *Aha!* 'I now know this'; *oh-oh!* 'I now know something bad can happen'; Ru *ogo!* 'I now know something surprising'; Ewe *ehē!* 'I now remember'; Warlpiri (Australian) *karija* 'I don't know').

Conative interjections are those expressions which are directed at an auditor. They are either aimed at getting someone's attention or they demand an action or response from someone (English *sh!* 'I want silence here'; *eh?* 'I want to know something'; Australian English *cooe* and Ru *a'u* which are used to keep contact with people in the bush). Presentational interjections with the meaning 'I want you to take this thing

I am holding out to you now' which are found in various languages may be classified as conative interjections (e.g., Italian *to!*, Jap *hai!* (in one use), Aranda (Australian) *me!* and Mayali (Australian) *nja!*) Calls to animals, etc., also belong here as conative interjections.

Phatic interjections are used in the establishment and maintenance of communicative contact. A variety of conventional vocalizations which express a speaker's mental attitude towards the ongoing discourse, that is backchanneling or feedback signaling vocalizations, may be classified as phatic (English *mhm*, *uh-huh*, *yeah*). Included in this class also are interjections used in the performance of various interactional routines, such as greeting and leave-taking, and in the organization of discourse (e.g., English *OK*).

#### 4. Interjections as Peripheral Elements

There are at least three senses in which one can talk about interjections as being peripheral to language. One is that interjections are peripheral to language as a whole: they are paralinguistic. Interjections are viewed as an accompaniment to language or communication rather than being a form of linguistic communication themselves. However, interjections form a distinct subset of paralinguistic vocalizations because of their conventionality. This conventional subset of paralinguistic elements seems to be on the boundary between verbal and non-verbal communication. From that point of view it seems true that interjections are somehow peripheral to language.

Another interpretation of the peripherality of interjections is based on their syntactic independence. Since interjections do not enter into construction with other elements they are not well integrated into the clause grammars of languages.

Finally, because some interjections are made of sounds that are not found elsewhere in the language system, they are said not to belong to the main sound system. However phonological aberrance is not restricted to interjections alone but is a feature also of other elements in natural languages such as pronouns and demonstratives which are considered by linguists to be part of the core of the language system. For instance, in Ngan'gityemerri (Australian), the palatal nasal [ɲ] occurs word initially only in two words in the language: in the second person singular pronoun *nɪni* 'you' and in the onomatopoeic word *ɲurɲ* 'sniff.' These words display a peculiar phonological structure with respect to the rest of the language. Similarly, in English the sound [ð] occurs only word initially in pronouns, demonstratives and other deictic (see *Deixis*) elements such as *this*, *that*, *they*, *there*, *then*, etc. Such words are also thus phonologically anomalous, but they have not been thought of as peripheral linguistic elements. The peculiar phonology of some interjections should therefore not be used as an argument for considering interjections as peripheral to the language system.

#### 5. Interjections, Pragmatic Devices, and Pragmatic Functions

Interjections share their context-boundedness with other pragmatic devices, viz: particles, vocatives, and routines in general. That is, they are all produced in reaction to a linguistic or extralinguistic context, and can only be interpreted relative to the context in which they are produced. Nevertheless, interjections form a distinct class. They differ from particles in their relative syntactic independence. That is, whereas particles are fully integrated into the syntax of utterances and cannot constitute independent non-elliptical utterances by themselves, interjections can be utterances by themselves and they are always separated by a pause from the other utterances with which they may co-occur. Interjections always constitute an intonation unit by themselves. They are only loosely integrated into the grammar of the clause. This feature of interjections as both words and utterances sets them apart from other word classes including particles.

Interjections are a category of routines—linguistic expressions whose occurrence is socially defined with respect to standardized communication situations and which are produced automatically (or semi-automatically). Some researchers believe because of this that there is no difference between prototypical interjections and one-word routine formulae. Others believe that there is a fundamental difference. The latter argue that linguistic activities involving interjections do not constitute conversational encounters nor are they speech acts, whereas formulae always involve conversation and are speech acts. Closely allied to this difference is the claim that interjections do not have addressees, although they may be directed at people who are the intended interpreters of the communicative act in which they are involved (compare *She said thankyou to him* and *She said wow to him*). Note that *thankyou* is a formula while *wow* is an interjection. Nevertheless, interjections and formulae share a number of commonalities: both are forms of language that are found in most, if not all, languages, yet they encode culture specific meanings in these languages; both forms are also indexical. It is traditional for both types of words to be described as interjections, but such a use of the term interjection is too broad.

Some interjections may be used as discourse markers. That is, they may serve to mark the boundaries of discourse units (e.g., English *oh*, *ah*). Other interjections can function as interrogative tags (e.g., English *It's tasty, eh?*).

Interjections share their anomalous phonological nature with onomatopoeic words. For this reason, descriptive grammars usually include onomatopoeic words and iconic depictives as a subclass of interjections. Furthermore, some interjections, like onomatopoeic words, do display a fair amount of sound

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symbolism. Nevertheless one can still distinguish between interjections and onomatopoeic words and ideophones. First, onomatopoeic words, etc., tend to be descriptive rather than expressive of a mental state as interjections are. Second, the ideophones, etc., may not be able to stand on their own as utterances without being elliptical. Notice that the use of interjections as utterances in themselves does not involve ellipsis.

### 6. Issues in the Analysis of Interjections

As mentioned earlier, interjections are simultaneously words or lexemes and utterances. This feature has consequences for their grammatical and semantic analysis. The grammarian is unsure as to whether they are words or sentences. The semanticist or lexicographer does not seem to have an adequate means of dealing with lexemes which both predicate and refer, as interjections do by virtue of being utterances. From the point of view of pragmatics, the debate about whether interjections are speech acts or not remains to be resolved. Some of these problems and current research on different types of interjections in several languages of the world are discussed in a special issue of the *Journal of Pragmatics* (1992).

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## Logophoricity and Long-distance Reflexives

L. Stirling

In English, the sentence *Sue said that she went home* is ambiguous between one reading in which Sue reported an action of her own and a second reading in which she reported that someone else went home. Some languages have a means for disambiguating such sentences. A special pronoun called a 'logophoric pronoun' is used in reported speech and perhaps also in reports of mental and psychological states, to indicate that the source of the report or the experiencer of the cognitive state is the same person whose actions are being reported. 'Reflexives' are pronouns like English *herself* used where the subject and object of the sentence refer to the same individual, as in *She washed herself*. In some languages reflexives can be used in a similar way to logophoric pronouns. The

term 'logophoricity' has been used to describe a wide range of phenomena, and its precise delimitation awaits further work. In all cases, what is characteristic of logophoric uses of pronouns is that they cannot be accounted for by purely syntactic principles. Instead, their use and distribution is governed at least in part by discourse, semantic, or pragmatic principles. These concern the way the speaker chooses to present the information, in accordance with its source; whose perspective on it the speaker is adopting; and whether or not the speaker is committed to its truth.

### 1. Logophoric Pronouns

The term 'logophoric' ('returning to the discourse') was created by Claude Hagège (1974) to describe a



type of pronoun found in a number of West African languages. He defined it as follows (my translation): 'The term "logophoric" is here proposed to designate a particular category of anaphoric pronouns, personal and possessive, which refer to the author of a discourse or to a participant whose thoughts are reported' (Hagège 1974: 287).

Example (1) illustrates the use of the logophoric pronoun in the West African language Igbo (Hyman and Comrie 1981: 19). In addition to the normal set of personal pronouns, which includes the third person singular subject pronoun *ó*, there is a logophoric pronoun *yá*. This logophoric pronoun is used to indicate necessary coreference between the subjects of two clauses, where one clause contains a verb of communication such as *say*, and the other is an embedded clause in which the content of the speech is reported. In such a context, use of the ordinary third person pronoun as in (1a) normally indicates disjoint reference.

(a) *ó siri ná ó byàrà* (1a)  
he said that he came  
'He<sub>i</sub> said that he<sub>j</sub> (someone else) came.'

(b) *ó siri ná yá byàrà* (1b)  
he said that LOG came  
'He<sub>i</sub> said that he<sub>i</sub> (himself) came.'

The term 'logophoric context' is used to refer to the embedded complement clause, and more generally to the syntactic and/or discourse domain in which it is possible to use a logophoric pronoun. Verbs which introduce logophoric contexts are called 'logophoric verbs.' The term 'logocentric NP' is used to refer to the antecedent NP in the matrix clause with which the logophoric pronoun is coreferential. Constraints on the logophoric context and on the logocentric NP are described in Sect. 3.

The African languages which have been identified as possessing logophoric pronouns belong to the Niger-Congo and Chadic families. Ewe has been most extensively discussed (Clements 1975). Hagège and subsequent writers have compared logophoric pronouns in African languages with particular uses of reflexive pronouns in other languages, termed 'long-distance reflexives.' These have received considerable discussion for Scandinavian languages, Japanese, and Italian, and have been reported for a wide range of other languages including Latin, Northern Pomo, Malayalam, and the Caucasian languages Chechen and Ingush (see Sect. 2). The term 'logophoric system' will be used to generalize over logophoric pronouns and long-distance reflexives, with the caveat that the degree to which the two types can be accounted for by the same mechanisms is still to be determined.

General surveys of logophoric phenomena may be found in Sells (1987) and Stirling (1992). Also relevant

is Koster and Reuland (1991), a collection of papers on long-distance anaphora within the theoretical framework of Binding Theory.

## 2. Long-distance Reflexives

Reflexive pronouns such as English *himself*, *herself* are normally constrained to take their interpretation from an antecedent NP within the same clause. Thus in the English sentence [*Bill said [that John had hurt himself]*] the reflexive pronoun *himself* must be understood as coreferential with the antecedent NP *John* in the embedded clause, and cannot be interpreted as referring to Bill. However, in many languages it is possible in certain circumstances to interpret a reflexive pronoun as coreferential with an antecedent in a higher clause, thus in the translation of the English example given above it would be possible for the reflexive to refer to either John or Bill. Such uses have been called 'long-distance reflexives,' 'non-clause-bounded reflexives' or, within the framework of Binding Theory, 'long-distance anaphors.' Example (2) illustrates the long-distance use of the reflexive pronoun *sig* in Icelandic (Anderson 1986: 66).

*Jón segir að María elski sig.* (2)  
John says that Mary loves SELF  
'John<sub>i</sub> says that Mary loves him<sub>i</sub>.'

Such uses of reflexive pronouns are compared with logophoric pronouns because of rather striking similarities in their syntactic, semantic, pragmatic, and discourse properties. In particular, long-distance reflexives in languages such as Icelandic and Japanese seem to obey the same constraints on the logophoric context and logocentric NP as the African languages. These constraints are described in Sect. 3. (Koster and Reuland (1991) survey a range of syntactic properties of long-distance reflexives which cannot be detailed here.)

## 3. The Typology of Logophoric Systems

Logophoric marking takes various forms. In addition to free pronouns as in Igbo, pronouns cliticized to the verb as in Ewe, and logophoric uses of reflexive pronouns, one finds systems such as that in the Nigerian language Gokana. Here there is no special logophoric pronoun form, but ordinary third person personal pronouns are used logophorically by virtue of the appearance of a morphologically invariant logophoric marker suffixed to the verb. See example (3) (Hyman and Comrie 1981: 20).

(a) *aè kò àè dò* (3a)  
he said he fell  
'He<sub>i</sub> said that he<sub>j</sub> fell.'

(b) *aè kò àè dɔ-è* (3b)  
he said he fell-LOG  
'He<sub>i</sub> said that he<sub>j</sub> fell.'

## *Logophoricity and Long-distance Reflexives*

The main constraint on logophoric expressions is that they are almost always third person, with second person forms appearing in a few languages such as Ewe.

Singular and plural forms may be distinguished. If a plural form is available, it may be used to indicate coreference with a singular antecedent, provided the logophoric pronoun refers to a set of entities of which the antecedent is a member. See example (4) from Ewe (Sells 1987: 449). However it is not possible for a singular logophoric pronoun to have a plural antecedent, regardless of whether the set referred to by the plural NP includes the referent of the singular pronoun.

kofi kpɔ be yèwo-do go (4)  
Kofi see COMP LOG — PL-come out  
'Kofi saw that they (including Kofi) had come out.'

There are no general constraints on the grammatical functions which logophoric pronouns and long-distance reflexives may fill. While some languages have only one logophoric form restricted to a particular function (for example, in Igbo there is a subject logophoric pronoun only), others have distinct forms for different grammatical functions (for example, some Ubangi languages have separate forms for subject, direct object, indirect object, alienable, and inalienable possession). Similarly, long-distance reflexives may be invariant in form, as is Japanese *zibun*, or not, as in the case of Icelandic, where the special third person simple reflexive is invariant for number and gender but has accusative, dative, and genitive (though not nominative) case forms.

### *3.1 Constraints on the Logophoric Context*

The logophoric context is defined as that domain in which it is possible to use a logophoric pronoun. The central use of logophoric pronouns cross-linguistically is within clausal complements of verbs of saying. If a language further generalizes its range of logophoric contexts, it will do so according to the implicational universal hierarchy diagrammed below:

Logocentric verb hierarchy: communication >  
thought > psychological state > perception.

That is, if verbs of one kind trigger a logophoric context, then so will verbs of the kinds to the left of it on the hierarchy. Some languages, such as Igbo, restrict logophoric contexts just to verbs of communication, and some, such as the Chadic language Mapun, just to the verb *say*. Others, like Ewe, allow all four types of verb.

The logophoric context is frequently introduced by a 'report opening' complementizer. Such complementizers are often homophonic with and historically derived from the verb *say*. It is common for

verbs in a logophoric context to require subjunctive mood.

Languages may further extend the range of logophoric contexts if these become grammaticalized in some way. Usually what happens is that the 'report-opening' complementizer, which introduces the embedded clause constituting the logophoric context, has its distribution extended beyond complements of verbs of communication, thought, psychological state, or perception. For example, in the African language Tuburi, the complementizer has become part of the relative clause marker, and logophoric pronouns are thus licensed in relative clauses, which is not possible in other logophoric languages. The general term 'logophoric trigger' can be defined to refer to that which licenses the logophoric pronoun, whether it is a logophoric verb or a complementizer.

Apart from the way they are introduced, the main parameter of variation for logophoric contexts is whether they are constrained to be local to the logocentric trigger, or whether it is possible for them to extend over an arbitrarily long stretch of discourse following it. Mundang is a language of the first type; it requires the logocentric trigger to be local, usually in the preceding clause (i.e., the matrix clause). However, most logophoric languages are of the second type. Not only may any clausal modifiers which form part of the clausal complement of the logophoric verb contain logophoric pronouns, but the logophoric context may even extend across sentence boundaries. Some such cases resemble the 'style indirect libre' of literary texts, in which the author 'takes the part' of an internal protagonist. Usually the logophoric context is maintained through continuing use of a report-opening complementizer or subjunctive mood. Example (5), translated from Hagège (1974: 298), is from the African language Tuburi, and was produced by an informant during a long story relating to the origin of his clan, thirty minutes after the initial passage which contained an introductory verb ('My elders taught me that ...'):

sā:rā dūs sō (5)  
LOG scattered thus  
'They thus scattered.'

In this section the focus has been on logophoric pronouns in African languages. However, a major reason for extending the characterization to long-distance reflexives has been that they tend to occur in very similar contexts. For example, in Icelandic such pronouns are normally found in the complements of verbs of communication, thought, psychological state, or perception, and are usually associated with the use of subjunctive mood which is either required or allowed by these verbs. The logophoric context may extend across sentence boundaries and in such cases it is maintained by continued use of subjunctive mood.

### 3.2 Constraints on the Antecedent NP

The antecedent logocentric NP is an argument of the logophoric verb or of the verb immediately preceding the report-opening complementizer. It is almost always the subject of its clause. However it may be some other argument, provided this argument is the 'source' of the speech or of the mental, emotional, or experiential content being reported, or the protagonist from whose perspective it is being presented. Languages differ in the precise constraint they place on the grammatical function and semantic role of the logocentric NP. It is most usual for the relevant constraint to be just that the NP bears the appropriate discourse-semantic role. However, in Japanese the constraint is more liberal. The antecedent for *zibun* in its long-distance use must be either a grammatical subject (even if not source) or the source argument of a logophoric verb (even if not subject). In contrast, in Icelandic a more restrictive constraint is in operation. The antecedent for the long-distance reflexive must be both subject and source, and nonsubject sources may not be antecedents. These differing constraints mean that languages differ as to whether passive versions of logocentric predicates may introduce logophoric contexts: in Japanese they may, but in Icelandic they may not.

### 4. Logophoric Systems and Evidential Meaning

In many languages, given a logophoric context in which there is coreference with the logocentric NP, speakers may choose to use a logophoric expression or to use an ordinary personal pronoun. In such cases the appropriate choice between subjunctive and indicative mood, if relevant, must also be made. In all the languages in which such a choice is possible, it is associated with a meaning distinction of a consistent kind: if the ordinary pronoun is used, it indicates that the speaker has assimilated the proposition being reported into her own scheme of things, and accepts its truth and/or approves of its content. If the logophoric expression is chosen, it indicates that the speaker has not assimilated the proposition into her knowledge base, and does not necessarily accept its truth or approve of its content: in some sense, responsibility for its truth or content is distanced, and left to the referent of the logophoric expression. That is, the optionality of logophoric reference allows the speaker to express her attitude to the truth of what she reports.

Logophoric systems are thus part of the 'evidential system of the language, i.e., all those ways of indicating the source of information being reported and the speaker's commitment to the truth of what is being said. Choice between logophoric and non-logophoric expressions, and choice of mood are both the result of a prior choice at the semantic/pragmatic level, as to how the proposition is to be presented.

### 5. Theoretical Description of Logophoric Systems

Two theoretical questions have provoked considerable discussion in the literature: do logophoric pronouns and long-distance reflexives represent the same type of anaphoric phenomena, and should their distribution be handled syntactically or in the semantics/pragmatics, or both?

Two accounts for logophoric systems have been proposed within Discourse Representation Theory, by Sells (1987), and Stirling (1992). Both accounts introduce into the discourse-semantic representation information about semantic roles. Sells accounts for logophoric uses of pronouns through the interaction of three discourse-semantic roles: the 'source' of the report, the 'self' whose mental state is described, and the 'pivot' from whose spatiotemporal point of view the report is made. Stirling argues that only one primitive is necessary to account for logophoric reference, that of the assigned epistemic 'validator' of the proposition in question.

Purely syntactic explanations have been sought within the framework of Government-Binding Theory and recent modifications of it. However, although certain structural constraints hold on the distribution of logophoric pronouns and long-distance reflexives, it has been difficult to find a place for them within the range of possibilities provided for by the Binding Theory in its canonical form. They are not 'anaphors' in the technical sense (see *Anaphora*) since they contradict Principle A of the Binding Theory, which states that an anaphor must be bound in its governing category. Furthermore, unlike canonical anaphors, logophoric pronouns and long-distance reflexives are not in complementary distribution with normal personal pronouns. More serious is the problem that in many languages, logophoric and long-distance reflexive pronouns may lack an antecedent within the sentential context.

Moreover, not only is syntactic binding not a necessary condition, but it is also not sufficient to account for the distribution of these pronouns. The definition of the logophoric context normally makes crucial reference to the lexical semantics of the matrix verb, and the logocentric NP is commonly constrained to have as its antecedent an NP with the semantic role of 'source' of the proposition or experiencer of the cognitive state being reported.

More recent work in this framework, of which an overview can be found in Koster and Reuland (1991), has suggested that while the Binding Theory can be modified to account for some non-clause-bounded uses of reflexives, there are other uses such as some of those in Icelandic and Japanese which the theory cannot and should not account for. These uses, for which the term logophoric is adopted, are those where there are no apparent structurally definable constraints upon the binding relation between the anaphor and its antecedent. Instead there are discourse,

## Logophoricity and Long-distance Reflexives

semantic, and pragmatic constraints of the kind described in Sect. 3. This class primarily includes those examples where the antecedent is not within the same sentence as the anaphor.

Reinhart and Reuland (1991) propose to further extend the use of the term logophoric to cover various uses of reflexive pronouns in English which are not amenable to structural description within the Binding Theory. These include cases such as those in (6) where the pronoun appears in a 'picture'-type NP or in an adjunct.

- (a) Lucie<sub>i</sub> likes [pictures of herself<sub>i</sub>]. (6a)
- (b) John<sub>i</sub> said [that the paper was written  
[by Anne and himself<sub>i</sub>]]. (6b)
- (c) Bismarck<sub>i</sub>'s impulsiveness had, as so often,  
rebounded [against himself<sub>i</sub>]. (6c)

### 6. Related Phenomena

Logophoric systems have been likened to other cross-clausal reference tracking systems, such as switch-reference systems. In both, distinct subject pronouns may be used in a dependent clause to indicate same or different reference with the subject of a controlling clause. The most obvious difference between the two types of system appears to be whether the marking is on the NP or the verb of the dependent clause. In logophoric systems, the markers are normally part of the language's pronoun system rather than being affixes or conjunctions used alongside any pronouns which are usually present, as in switch-reference.

Comrie (1983) has suggested that logophoric systems may develop into switch-reference systems, on the basis of his study of the African language Gokana. As example (3) in Sect. 3 shows, this language is unusual in that the logophoric context is marked by a verbal suffix rather than by a pronoun. Although there are other respects in which the Gokana system differs from typical switch-reference systems, the verbal morphology has led Comrie to suggest that it is a young switch-reference system.

There are however other points of difference between the two types of system, which warrant treating them separately. Most importantly, logophoric marking is usually not pervasive like switch-reference, but is restricted to the embedded complement clauses of a set of logophoric verbs which can be distinguished on a largely semantic basis. Switch-reference is not restricted in this way: it may be restricted syntactically, to particular kinds of subordinate or medial clauses, but it is not restricted to particular lexically governed semantic contexts. In addition, there are marked differences between the pivotal NPs in a logophoric relation and switch-reference pivots. The logocentric NP in the controlling clause is typically constrained to

have a particular discourse-semantic role and/or to be the grammatical subject of the clause, while the logophoric pronoun itself may normally have any role in the dependent clause. Logophoric NPs also tend to be restricted to the third person, and such a person restriction is not typical of a switch-reference system. Finally, switch-reference systems tend to indicate other types of coherence or lack of coherence between the two clauses in the relation, as well as referential coherence.

Another related phenomenon is 'obviation.' This term has had various uses (see *Switch-reference and Related Phenomena*). The relevant use, for which central cases are found in Algonquian languages, is where distinct pronominal forms, a third person and a 'fourth person,' are assigned to different third person referents according to their relative centrality or importance in the discourse. In some cases the 'fourth person' is apparently a reflexive third person, for example in the Yup'ik Eskimo system, and such systems may more properly be described as belonging to the category of long-distance reflexives.

### 7. Future Work

The most urgent need is for clarification of the types of long-distance reflexives found crosslinguistically and the relationship between these different types and logophoric pronouns in African languages. Such clarification depends upon detailed description of the syntactic, semantic, pragmatic, and discourse properties of a range of different systems, in particular those of the African languages.

See also: Anaphora: Reflexives and Reciprocals; Switch-Reference and Related Phenomena.

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## Mass Expressions

M. Krifka

Traditional wisdom distinguishes, for languages like English, between two sorts of nouns that show different behavior in morphology and syntax, namely 'count nouns' like *car*, *cloud*, *chair*, *symphony*, *number*, and 'mass nouns' like *oil*, *gold*, *furniture*, *measles*, *music*, *happiness* (see Jespersen 1924).

Morphologically, mass nouns are special insofar as they lack the number distinction characteristic for count nouns. They have only a singular form (cf. \**oils*, \**golds*, etc.), or a plural form (cf. \**measles*); the traditional terms are 'Singulare tantum' and 'Plurale tantum,' respectively. Pluralia tantum are rare in English, but abound in other languages (e.g., Swahili *maji* 'water,' *mafuta* 'oil,' which belong to a noun class that is formally plural). The morphological criterion has to be applied with care, however, as there are count nouns which also lack an overt number distinction (e.g., *fish*); in this case, only 'agreement phenomena' reveal that it is still necessary to distinguish between singular and plural (e.g., *the fish is dead* versus *the fish are dead*).

Syntactically, mass nouns are special in that they do not combine directly with 'number words'; witness \**one oil*, \**two oil(s)* versus *one car*, *two cars*. They may occur in 'numerative constructions' like *two gallons of oil*, or *three pieces of furniture*; in this they are similar to plural count nouns, for example, *five pounds of apples*, *a herd of cows*. Also, 'quantificational determiners' are often sensitive to the mass/count distinction; for example, *every*, *many*, or *few* select for count nouns (e.g., \**every oil*, \**many oil*), whereas determiners like *much* or *little* select for mass nouns (e.g., *much oil*, *little gold*). Finally, mass nouns do not take the indefinite article (e.g., \**an oil*), but can form an NP on their own (e.g., *Oil spread over the surface*). Such 'bare NPs' are called 'mass terms.' Note that bare NPs can also be formed with plural count nouns, for example, *Nuts were in the basket*, but not with singular count nouns, for example, \**Nut was in the basket*.

The mass count distinction is by no means universal. In so-called 'classifier languages,' such as Chinese or Thai, all nouns behave like mass nouns in English. There is no plural; every noun may be used as bare NP; and nouns cannot be combined with number words directly, but need a special word, the so-called 'classifier.' One example is Chinese *san ben shu*, 'three CLASSIFIER book,' three books; it might be compared with constructions like *fifty heads of cattle*. According to word order data reported in Greenberg (1972), the number word and the classifier always form a syntactic or morphological unit.

It has often been remarked that mass nouns and count nouns do not form distinct classes. There are

nouns that arguably can be treated as either mass or count (e.g., *bread*). Furthermore, nouns that seem to belong to one class may be coerced to the other by specific syntactic constructions. Mass nouns may occur as count nouns; for example, *three beers* 'three glasses of beer,' *three oils* 'three kinds of oil.' And count nouns may occur as mass nouns; for example, *apple* in *Put more apple into the salad!* In this example, the use of a mass noun indicates reference to the stuff that makes up the reference objects of the count noun. Pelletier (1974) reports an invention by David Lewis, the 'universal grinder,' that transforms the denotata of count nouns to the stuff they consist of; in this context, it even makes sense to say things like *there was chair all over the floor*. Count nouns used as mass nouns do not necessarily refer to the stuff of objects, however, as real-life examples like *this huge piece of University* show. There are different ways to account for the mass/count variation (see Pelletier and Schubert (1989) for a discussion). It may be assumed that mass nouns and count nouns are clear syntactic categories with some semantic impact, but that in many cases the mapping of lexical nouns to either class is not strict. The meaning of a noun occurrence, consequently, is a function of its lexical meaning and the syntactic context in which it appears. For example, *apple* in *more apple* refers to apple-stuff (by virtue of its lexical meaning), but disregards the structuring into single apples (by virtue of its mass noun form).

The distributional differences between mass nouns and count nouns reflect semantic distinctions. The traditional criterion is 'countability' (see Jespersen 1924): The denotata of count nouns can be counted, in contrast to the denotata of mass nouns, as they lack inherent borders that distinguish them from each other. Note that this criterion applies only to a subset of mass nouns, like *oil* or *happiness*, but not to others, like *furniture* or *cattle*. It is useful to distinguish the first group of mass nouns as 'stuff nouns' from the second, which sometimes are called 'collective nouns.'

Another well-known criterion (see Quine 1960) is 'cumulativity': if a mass noun like *oil* applies to two entities, *x* and *y*, then it also applies to *x* and *y* together. This criterion seems to be more basic than countability; however, it has to be applied with care. First, plural count nouns behave just like mass nouns: if *cars* applies to *x* (say, a Jaguar and a Porsche) and to *y* (say, a Lada and a Trabant), then it applies to *x* and *y* together as well. Second, note that a singular count noun like *car* is unsaturated and needs an article or a number word, as in *a car*, to act as a predicate. Therefore, whenever *a car* applies to *x* and to *y*, then it does not apply to *x* and *y* together, given

that  $x \neq y$ . But this property of 'noncumulativity' also applies to plural NPs like *three cars*, and to NPs based on mass nouns like *three gallons of oil*. Hence cumulativity and the mass count distinction are only indirectly related to each other.

To capture the cumulativity of mass nouns and 'bare' plurals, formal semantic theories have been developed whose domain of objects is structured in such a way that for every two objects there is one object that represents their sum. The underlying mathematical structure has been shown to be a 'join semi-lattice,' that is, a structure that contains the two-place operation 'be the sum of  $x$  and  $y$ ,' and the concomitant part relation ' $x$  is a part of  $y$ ' (see Link 1983).

It has been argued that natural language supports more than one such lattice structure, for example, one for quantities of matter and one for objects (see Link 1983; Bach 1986; Lønning 1987). For example, it is reasonable to distinguish between an object, like a ring, and the matter that constitutes that object, like a quantity of gold; the first might have properties like being new, or being made in Amsterdam, which the second one lacks. There are also some predicates that do not distinguish between form and matter, namely spatiotemporal predicates like *be in the safe*.

The lattices for mass nouns and count nouns differ in one important respect: with most mass nouns, it remains unclear how fine-grained the domain should be. For example, it is not obvious whether there are minimal parts of a quantity of lemonade to which the predicate *lemonade* applies. With count nouns, such minimal parts can be assumed; hence the assumption can be made that the lattices of count nouns are 'atomic.' For example, single apples constitute the atoms for the noun *apple*. A consequence of that is that 'distributive predications' are found typically with count nouns, as in *the apples cost 50 cents*, which in one reading says that every single apple (i.e., every atom of the object referred to by *the apple*) costs 50 cents. With mass nouns, only the cumulative reading is found, or the distributive reading relies on the context, as in *the oil costs three dollars (per gallon)*.

Predicates like *three gallons of oil*, or *three apples*, or *three pounds of apples*, can be treated in this framework by assuming certain measure functions that are related to the lattice structure (see Cartwright 1975; Krifka 1989). These predicates are noncumulative, and in addition 'quantized' in the sense that whenever they apply to an object  $x$  then they cannot apply to proper parts of  $x$ . With numerative constructions the measure functions are introduced explicitly by words like *gallon* or *basket*, whereas count noun constructions like *three apples* suggest that the measures are built into the meaning of the count noun itself, and that the number word simply specifies a value on that measure function.

A further distinction found in the literature is between 'nominal' and 'predicative' mass terms (see

Quine 1960). Nominal mass nouns refer to a kind, as in *water is vital*; so they are 'generic.' Predicative mass nouns are used predicatively, as in *this puddle is water*, or *John drank water* (which can be rendered as 'John drank something that was water'). The same distinction shows up with plural count nouns; for example, *Apples have been cultivated since 5000 BC* versus *these fruits are apples* and *John are apples*. There are various ways to relate the kind-referring and the predicative use to each other (see Bealer 1975).

It has been argued that the mass/count distinction does not only apply to nouns. For example, it may apply to 'adjectives': adjectives that refer to the shape of objects, like *cubic*, are not cumulative, as the sum of such objects may have a different shape, whereas adjectives that refer to the matter, like *wooden*, are cumulative and may be called 'mass' adjectives (see Quine 1960).

Perhaps more interesting is that 'verbal expressions,' too, can be classified as cumulative or quantized. For example, *run* is cumulative: whenever reference is made to two events of running (of John, say), then their sum will be an event of running (of John) as well. The predicate *run a mile*, however, is quantized, as a proper (temporal) part of an event of running a mile is not an event of running a mile anymore. Thus, the distinction between different aspectual classes can be captured, like 'activities' and 'accomplishments.' Another important observation (see Verkuyl 1972) is that with many verbs, the reference type of the object affects the aspectual class of the complex verbal expression; for example, *drink wine* is cumulative, whereas *drink a liter of wine* is quantized. This suggests that the reference type of the object NP is mapped to the reference type of the verbal expression, probably due to the fact that the entity to which the object NP refers is subjected to the event in an incremental way (see Krifka 1989).

See also: Classifier Languages; Determiners.

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## Modality

F. Kiefer

### 1. Definition

Things might be, or might have been, other than they actually are, or were. To conceive of a state of affairs being otherwise is to conceive of its being true or real in some nonactual world(s), or true or real in some state of the actual world at a point in time other than the present moment (Perkins 1983: 6–7). The essence of ‘modality’ consists in the relativization of the validity of sentence meanings to a set of possible worlds. Talk about possible worlds can thus be construed as talk about ways in which people could conceive the world to be different.

This view of modality covers most of what linguists usually treat under the heading of modality. It excludes, however, from the domain of modality *factive* evaluative predicates such as ‘it is good,’ ‘it is bad,’ ‘it is amazing.’ In the sentence ‘It is amazing that Bill passed the exam’ it is taken for granted that ‘Bill passed the exam’ which is qualified by the speaker’s reaction to this state of affairs. Since the primary function of a *factive* predicate is to comment on, or evaluate, an aspect of the world that is, rather than of some world that might be or might have been, evaluations do not come within the scope of modality.

How does negation fit into the adopted framework? To paraphrase ‘It is not true that Bill is sick’ the speaker would have to say that the proposition ‘Bill is sick’ has to be evaluated in those possible worlds in which this proposition is false (Perkins 1983: 47–48). Or, to put it differently, the negation of an event would have to be characterized in terms of the occurrence of the event being made relative to its nonoccurrence which is a strange consequence. Negation is not a modal category.

As to illocutionary verbs, these refer to an act and are not used to relativize the validity of a state of affairs. Consider, ‘I assert that all men are mortal.’ What does it mean to say that something is compatible with what I assert? There is no meaningful

answer to this question: Illocution is alien to the notion of modality.

The same holds true for perlocution. The effects that an act may bring about in the addressee cannot affect the act itself, that is, the proposition which describes the act is independent of the eventual consequences of the particular act (Kiefer 1987: 87).

On the other hand, the concept of modality as the relativization of the validity of a proposition to a set of possible worlds also covers the logical modalities. Modality in logic is based on the concepts of possibility and necessity. The person who utters the sentence ‘It is possible that it will rain tomorrow’ does not normally know for sure what the weather will be like tomorrow. That it will rain tomorrow is not excluded, it is one of the possibilities. Possibility thus means that the proposition in question is true in at least one possible world. Similar interpretation is available for the sentence ‘It is certain that it will rain tomorrow.’ This sentence means that whichever of the possible worlds comes to be realized, it will rain tomorrow. In other words, it will rain tomorrow in all possible worlds (Allwood, et al. 1977: 108).

### 2. The Linguistic Tradition

Linguists often identify modality with the meaning of syntactically or morphologically defined ‘modal’ expressions. It is possible to say, for example, that modality is whatever is expressed by the set of modal auxiliaries (e.g., in German, English). Modality in this sense refers to the meanings of modals. ‘It is not necessary to define precisely what kinds of meanings are involved. We take the formal category as our starting-point, and it is sufficient for our purpose that the meanings involved are such as to justify characterizing them as “modality”’ (Palmer 1979: 4–5). There are several problems with such a proposal. One of the problems is connected with the fact that in whichever way the set of modals is defined, not all

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modals will share all the properties. For example, traditionally the following differences have been noted, among other things, between modals and full verbs in English: (a) modals do not allow for *do*-support, (b) they undergo inversion with the subject in questions, and (c) they occur with the enclitic *not*. These properties do not apply consistently to the 'semi-modals' *need* and *dare*. Moreover, the 'unverb-like properties' of modals are idiosyncratic properties of these verbs in English. (They do not occur together, they do not participate in number agreement, and perhaps most important, they do not have participles or infinitives and so can only occur in the leftmost position.) The restrictions mentioned do not hold for German; cf., for example, '*Das sollten Sie beweisen können*' 'You should be able to prove it.' It is particularly difficult to distinguish semantically between modal and nonmodal verbs. This is shown by the fact that English uses auxiliary verbs or other verbs to express the meaning conveyed by modals in German. For example, 'The house *is* to be sold'—'*Das Haus muß verkauft werden*' (Calbert 1975: 3–4).

Another view of modality identifies it with the speaker's evaluation of a state of affairs (Bally 1932, 1942). Each sentence consists of two parts: of what is said (the 'dictum') and of how it is said (the 'modus'). The modus can be expressed in a large number of ways. For example, '*I think it is raining*,' '*It is probably raining*,' '*It must be raining*,' '*I hope it will be raining*.' In these sentences the dictum can be identified as '*It is raining*,' everything else has to do with modality (the modus). Modality can thus be defined as the speaker's cognitive, emotive, or volitive attitude toward a state of affairs. Attitudes have to be distinguished from states which are brought about in the speaker by certain states of affairs. The linguistic expression of such states is not part of modality. In some cases the two uses, the attitudinal and the causative, appear in two different syntactic constructions. Compare the French sentences '*Je m'étonne qu'on ne me réponde pas*' 'I am astonished that I do not get an answer' and '*Je m'étonne de ce qu'on ne me répond pas*' 'I am astonished about the fact that I do not get an answer.' The predicate 'to be astonished' comes under the heading of modality in the former case only.

The main task of the linguist is to separate the modus from the dictum. Whenever the modus is expressed by a higher predicate, this task is relatively simple. What is needed is an adequate taxonomy of predicates. If linguists have such a taxonomy at their disposal they can say that an attitudinal (non-causative, transitive) verb occurring in the matrix clause is the expression of the modus and the embedded *that*-clause is the expression of the dictum. Verbs with this property are akin to the verbs of propositional attitude known from logic. The problem of separating the modus from the dictum becomes more complicated, however, if the expression of the modus is made part

of a simple sentence. In such cases the modus may appear in various forms: as an adverbial ('It is probably raining'), as a modal verb ('It must be raining'), or as mark on the verb (mood, tense), which may be quite complex ('He would never have left us').

Linguists sometimes make a distinction between 'sentence mood' and 'verbal mood.' The former is a semantic category, the latter a morphosyntactic category. Sentence mood is the modal value of sentence types. Several sentence types may express the same sentence mood. Thus, for example, the sentence mood of interrogativity may be expressed by a yes-no question, a disjunctive question, a wh-question. Declaratives, imperatives, interrogatives, optatives, and exclamatives all seem to express different sentence moods. Usually, the meaning of a sentence mood is expressed in terms of speaker's attitudes. The speaker's attitudes corresponding to the various sentence types can be paraphrased as follows: 'The speaker takes for granted that ...' for declaratives, 'The speaker wants to know ...' for interrogatives, 'The speaker is astonished about the fact that ...' for exclamatives, 'The speaker wants the addressee to bring about ...' for imperatives, and 'The speaker desires ... be the case' for optatives. Each of these formulations raises a number of problems. It is not quite clear, for example, whether exclamatives are distinguishable from declaratives and optatives from imperatives. In some way the exclamative attitude contains the declarative attitude since to be astonished about a state of affairs implies that one takes this very state of affairs for granted. Consequently, declaratives are more basic than exclamatives, the latter can be traced back to the former. As to imperatives and optatives they seem to have a common 'core' meaning: in both cases the speaker wants something to be the case, but while imperatives are addressee-oriented, optatives are not. This seems to indicate that there are perhaps only three basic sentence modalities ('moods'): declarative, interrogative, and imperative/optative.

The description of the modality of declaratives raises a different type of problem, which boils down to the following question: What does it really mean that declaratives represent the unmarked modality? It is arguable that Frege's distinction between 'thought,' 'judgment,' and 'assertion' can profitably be used in the description of declaratives. 'Thought' can be identified as referring to the state of affairs in question (the 'propositional content' of the sentence). 'Judgment' may be considered as an attitudinal operator with the approximative sense 'to take for granted' or 'to consider to be true' and 'assertion' expresses the fact that declaratives are typically used to make assertions. Declaratives may thus be conceived of as consisting of two parts: of the description of a state of affairs and of the expression of the judgment operator. The latter normally does not appear on the surface, hence the locution 'unmarked modality.' It may,



however, receive a special marker in so-called 'evidential systems' (see below). Semantically speaking, there is no reason to consider declaratives more basic, and in this sense unmarked, than the other modalities since this would imply that languages are considered to be 'essentially, if not solely, the instrument for the expression of propositional thought' (Lyons 1982: 103).

The view of modality in terms of speaker's attitudes is consistent with the characterization of modality as 'envisaging several possible courses of events' or 'considering the possibility of things being otherwise.' Declaratives constitute the default case.

### 3. Types of Modality

A sentence such as 'He may come tomorrow' may mean at least two different things. It may be paraphrased by 'Perhaps he will come tomorrow' in which case it expresses the speaker's beliefs concerning the state of affairs 'He comes tomorrow.' But it may also be paraphrased by 'He is permitted to come tomorrow' when it expresses the permission of performing an act. The former is referred to as 'epistemic modality,' the latter as 'deontic modality.' Epistemic modality is concerned with matters of knowledge and belief; deontic modality, on the other hand, is concerned with the necessity or possibility of acts performed by morally responsible agents (Lyons 1977: 793, 823). Modal sentences are, however, not always ambiguous between the epistemic and the deontic reading. For example, 'He may know the answer' can only be interpreted epistemically. The predicate of this sentence denotes a state and states can only be evaluated in terms of what is known. In general, however, the interpretation depends on the context.

In addition to epistemic and deontic modality, a number of further modal notions may be defined. A state of affairs may be possible or necessary in view of the circumstances, as in the sentence 'Bill can only relax in his summer house' which can be paraphrased as 'The circumstances in Bill's summer house are such that Bill can only relax in his summer house.' Or consider the sentence 'In the mountains pitched roofs must be built' which may be taken to mean that 'In the mountains the circumstances are such that pitched roofs must be built.' In these cases, one may talk about 'circumstantial modality.' The possibilities of an agent may also depend on his dispositions. The sentence 'Jane cannot sing today' may mean that 'Jane's dispositions are such today that she cannot sing.' Similarly, the sentence 'John must sneeze' can be interpreted 'dispositionally': 'John's dispositions are such that he must sneeze.' These sentences are examples of 'dispositional modality.' Circumstantial and dispositional possibility comes very close to ability or capability. In Hungarian, for example, the verb *tud* 'be able to' can be used to paraphrase circumstantial or dispositional possibility, but not epistemic

or deontic possibility. 'Boulomaic modality' has to do with someone's wishes. Thus by uttering the sentence 'Charles may be our leader' the speakers' intention may be to express the fact that in view of their wishes it is not excluded that Charles be our leader.

The context which determines the modal reading can be construed as a set of propositions ('the background') from which certain conclusions can be drawn. However, there is a clear intuitive difference between the epistemic and the nonepistemic use of modals in this respect. 'If we use an epistemic modal, we are interested in what may or must be the case in our world, *given everything we know already*. And if we use a circumstantial modal (= a nonepistemic modal, FK), we are interested in what can or must happen, *given circumstances of a certain kind*' (Kratzer 1981: 52). Correspondingly, the conclusion to be drawn from the background concerns the truth of a proposition in the case of epistemic modality and the occurrence of an event in the case of the nonepistemic uses (Perkins 1983: 35). This means that epistemic *can* is used to indicate that in view of what is known it is not excluded that the proposition in question be true. Epistemic *must*, on the other hand, means that this proposition represents the only possibility. In the case of nonepistemic uses the interpretations are slightly different. Nonepistemic *can* means that the background does not exclude the occurrence of the event in question and nonepistemic *must* expresses the fact that the background makes the occurrence of this event necessary (i.e., it admits only one possibility) (Öhlschläger 1989: 144). It should be made clear, however, that not all epistemic expressions can be traced back to the epistemic *can* or epistemic *must*. The same may be true of the nonepistemic expressions as well.

In principle, two kinds of epistemic modality can be distinguished: objective and subjective. Under one interpretation of the sentence 'Alfred may be unmarried' the speaker may be understood as subjectively qualifying his commitment to the possibility of Alfred's being unmarried in terms of his own uncertainty and the sentence is more or less equivalent to 'Perhaps Alfred is unmarried.' There are, however, situations in which the possibility of Alfred's being unmarried is presentable as an objective fact. The speaker might reasonably say that he knows, and does not merely think or believe, that there is a possibility of Alfred's being unmarried. (Lyons 1977: 797-8). Objective modality refers to reality, it is part of the description of the world. Subjective modality, on the other hand, is the expression of the speaker's beliefs. In some languages, this distinction is encoded in syntax. In Hungarian, for example, the subjective and the objective epistemic reading of 'Bill may be ill' are systematically expressed by two different structures: *Bill beteg lehet* lit. (Bill ill may-be), 'Bill is perhaps ill' and *Bill lehet beteg* 'it is possible that

Bill is ill.' The two sentences differ both in word order and in stress pattern (Kiefer 1986).

The semantic differences between subjective and objective epistemic modality are significant. Objectively modalized sentences are statements of fact and as such they can be denied and questioned, they can occur in if-clauses and they can be embedded under factive predicates. Subjective epistemic sentences, on the other hand, express the speaker's beliefs and are not statements of fact. Consequently, they cannot be denied or questioned, they cannot occur in if-clauses and they cannot be embedded under factive predicates. Objective epistemic sentences can be true or false, they can be evaluated by confronting them with reality. This is not the case with subjective epistemic sentences.

#### 4. Evidentials

There are languages which make use of 'evidential particles' (or affixes) in order to indicate the kind of evidence the speaker has for what he says. One of the clearest examples of such a system is found in Tuyuca (Brazil and Columbia—Barnes, 1984). In this language all sentences contain an evidential suffix which is attached to the verb. The strongest kind of evidence is that of visual (VIS) observation indicated by the suffix *-wi*: *diiga apé-wi* lit. soccer play + 3SG + PAST + VIS 'He played soccer' (I saw him play). Consequently, Tuyuca has no unmodalized declarative sentences (Palmer 1986: 27). Tuyuca has a system of five evidentials, the English sentence 'He played soccer' can also be rendered by *diiga apé-ti* 'I heard the game and him, but I didn't see it or him,' *diiga apé-yi* 'I have seen evidence that he played: his distinctive shoe print on the playing fields. But I didn't see him play,' *diiga apé-yigt†* 'I obtained the information from someone else' and *diiga apé-hīyi* 'It is reasonable to assume that he did.' Consequently, the traditional notion of epistemic modality must be expanded to include both the speaker's 'own judgments and the kind of warrant he has for what he says' (Palmer 1986: 51). Thus evidentiality can be placed a par with judgments of necessity and possibility as one of the two main systems of epistemic modality. Evidentials are 'markers that indicate something about the source of the information in the proposition' (Bybee 1985: 184). The primary evidential parameter expressed in natural language is that of 'direct evidence' versus 'indirect evidence.' Furthermore, languages tend to differentiate three general kinds of evidence within the direct/indirect distinction. 'In particular, two main types of indirect evidence are clearly seen: *evidence via verbal report and evidence upon which an inference is based* ... both contrast with direct evidence ...' (Willett 1988: 57). The two types of indirect evidence may be termed 'Reported' and 'Inferring,' respectively. Direct evidence may be called 'Attested.'

These three resulting areas of evidentiality are also often further subdivided to make more precise the nature of the source the speaker has chosen to specify. That is, Attested evidence may be specifically marked as involving the visual sense, the auditory sense, and/or one of the other three senses. Also, Reported evidence may be specifically marked as second-hand or third-hand (hearsay), or as part of the oral literature (folklore); and Inferring evidence may be specifically marked as involving either observable evidence (results) or a mental construct only (reasoning).

(Willett 1988: 57)

#### 5. Modality in Logic

There is a close relationship between certain types of linguistic modalities and modal notions as defined in logic. Classical logic was primarily concerned with 'logical' (or 'alethic') modality, in ordinary language, however, it plays a rather peripheral role. Clear cases of 'alethically modal' sentences do not occur frequently in everyday discourse. From a linguistic point of view the notions of epistemic and deontic modality are much more important. Both epistemic necessity and epistemic possibility are expressed by contingent propositions. A proposition is 'epistemically necessary' if it is logically entailed by what is known and a proposition is 'epistemically possible' if it is compatible with what is known. Though epistemic logic has had an important impact on the study of modality in natural language, the notion of logical entailment is too strong to be useful in the description of linguistic modalities. 'Epistemic necessity' in natural language is typically based on modal reasoning rather than on logical entailment. Moreover, epistemic logic cannot account for subjective epistemic modality which seems to be in many ways more basic in natural language than objective epistemic modality.

Like in modal logic, the close relationship between deontic and modal concepts is reflected in natural language. In most languages, the expressions of certainty, necessity, and possibility are also used for obligations and permissions. If the division of labor between semantics and pragmatics is accepted, it is reasonable to assume that 'deontic necessity' and 'deontic possibility' are semantic notions whereas obligation and permission belong to pragmatics. To impose an obligation on somebody or to grant permission are speech acts. By uttering the sentence 'You can park your car here' the speaker states a deontic possibility, but this sentence counts as a speech act of granting permission only if some additional conditions are met. (For example, the speaker must have the authority to grant such a permission.) It should also be noted that in everyday language the *deontic background* may just consist of what a recognized authority (parent, teacher, leader, etc.) wishes. In natural language, deontic necessity can be explicated in terms of practical inferences.

## 6. Modality and Syntax

Traditionally, the syntactic discussion of modals has focused on the status of so-called 'modal auxiliaries' and whether they are really auxiliaries or rather full verbs. The following are some recently presented arguments in favor of the latter option for German (Öhlschläger 1989). Genuine auxiliaries do not admit 'scope' ambiguities in connection with negation: negation always takes scope over the whole sentence. For example, '*Fritz hat nicht geschlafen*' 'Fritz has not slept' can adequately be paraphrased by '*Es ist nicht der Fall, daß Fritz geschlafen hat*' 'It is not the case that Fritz has slept.' On the other hand, scope ambiguities are quite normal with modal verbs. For example, '*Fritz will/möchte nicht kommen*' 'Fritz does not want to come' can either be interpreted as (a) it is not the case that Fritz wants to come or as (b) Fritz wants not to come. In other words, the modals *will* and *möchte* have both sentence and constituent scope. Another argument for treating modal verbs as full verbs comes from adverbial modification. Once again, in the case of genuine auxiliaries there is no scope ambiguity with temporal adverbials such as *today*, *yesterday*, *now*, etc. In contrast, scope ambiguities can often be encountered with modal verbs. For example, '*Fritz darf jetzt kommen*' 'Fritz may come now' may be paraphrased by either (a) 'What Fritz is allowed to do is to come now' or (b) 'It is now the case that Fritz is allowed to come.'

Since epistemic and nonepistemic modals behave differently from a semantic point of view, syntacticians have long since cherished the idea of associating the two types of modality with two different syntactic structures. Several proposals have been made in the literature. According to one recent proposal, nonepistemic modals should be considered *control* verbs and epistemic modals *raising* verbs (Stechow and Sternefeld 1988: 428). That is, the German verb *können* 'know, can, may,' if used nonepistemically, is described as a predicate of a matrix clause under which an infinite sentence with an empty subject is embedded. The empty subject must be coreferent with the subject of the main clause, that is, the latter controls the former; for example, '*Fritz kann gut kochen*' 'Fritz can cook well,' which is assigned the structure: [Fritz<sub>i</sub> [<sub>CP</sub> Pro<sub>i</sub> gut kochen] kann]. In the case of epistemic *können*, the underlying structure is different. The sentence '*Fritz kann gut gekocht haben*' 'Fritz must have been a good cook' is analyzed as [e [<sub>CP</sub> Fritz gut kochen] kann]. Once again, the modal embeds an infinite clause (a CP) but the subject of the main clause is empty (e). The subject of the embedded clause, Fritz, gets raised into this position by a raising rule. This explains certain syntactic differences between epistemic and nonepistemic modals. For example, it accounts for the 'transitive-like' behavior of nonepistemic modals which contrasts with the 'intransitive-like' behavior

of epistemic modals. For example, '*Ottokar muß singen, und das mußt du auch*' 'Ottokar must sing and you must do it, too' 'versus' + '*Ottokar muß Krebs haben, und das mußt du auch*' 'Ottokar must have cancer and you must have it, too,' which is ungrammatical (Ross 1969: 85).

It would seem, however, that the view that the two types of modals can systematically be associated with two different syntactic structures cannot be maintained. Though some modals in German can reasonably be analyzed as raising verbs (*dürfen*, *können*, *mögen*, *müssen*, and *sollen*) and others (*wollen*, *möchte*) as control verbs, the syntactic analysis seems to be quite independent of their modal meaning (Öhlschläger 1989: 54–131).

Mood, being a morphosyntactic category of the verb like tense and aspect, can appropriately be treated by means of morphosyntactic representations, which mediate between morphology and syntactic structure. Furthermore, mood may contribute to the definition of sentence types: the verb in declarative sentences is typically in the indicative mood, the subjunctive—in languages in which it can be found—may be characteristic of imperative and optative sentences. This is the case, for example, in Latin. Some languages (e.g., Hungarian) have both an imperative mood and an optative mood. Verbs in the imperative mood normally occur in imperative sentences, verbs in the optative mood in optative or conditional sentences. On the other hand, moods may have a number of other functions as well. The subjunctive, for example, has often—especially in subordinate clauses—a purely grammatical function (e.g., French). Moreover, though all languages seem to have means to express questions, only a restricted number of languages have a distinct mood for interrogatives. This means that even in languages which have the category mood as part of their verbal inflection, there is no one-to-one correspondence between moods and sentence types.

## 7. Typological Considerations

Languages have at least the following means at their disposal to express modality: (a) modal verbs, (b) verbs denoting (various degrees of) knowledge and belief, (c) modal adverbials, (d) modal particles, (e) evidentials, (f) grammatical mood. Languages do not make equal use of all these means. Moreover, some of them may be completely lacking in some languages. It is unclear, however, what the typological universals are, or if there are any: the typology of modality is still in its infancy. The following statements may, however, be reasonable candidates for such universals: 'If a language has modal particles, it also has modal adverbials,' 'If a language has an optative mood, it also has a subjunctive or an imperative mood,' 'If a language has modal verbs, it also has verbs denoting knowledge and belief.'

## Modality

### Semantically speaking,

There are at least four ways in which a speaker may indicate that he is not presenting what he is saying as a fact, but rather:

- (i) that he is speculating about it
- (ii) that he is presenting it as a deduction
- (iii) that he has been told about it
- (iv) that it is a matter only of appearance, based on the evidence of (possibly fallible) senses.

All of these seem to be expressed in some language or other, though there may be no language which distinguishes all four.

(Palmer 1986: 51)

Statements (i) and (ii) involve judgments, (iii) and (iv) evidentials. Some languages have both judgments and evidentials (for example, German), others have only one type of epistemic modality: English has only judgments, Tuyuca (see Sect. 4.) seems to have only evidentials.

### 8. Research

Current research on modality centers around the following topics:

- (a) *Evidentials*. Evidential particles or affixes as expressions of modality are a relatively recent discovery. Evidentials are markers that indicate the source and the reliability of the speaker's knowledge. Attested evidence is more or less equivalent with 'I know for sure,' reported evidence with 'it is possible' and inferred evidence with 'it is likely.' It can be argued that modality can be based either on possibility and necessity, or on evidentiality. This gives rise to two different, but interrelated, modal systems, and languages may vary according to which of these possibilities they exploit. English seems to be a language which has only possibility/necessity based on modality, Tuyuca (Tucanoan, Colombia and Brazil) indicates modality by means of evidentials, German has a mixed system. However, even modal verbs in languages such as English, German, and French, which traditionally were considered to express possibility and necessity, may in certain contexts function as evidentials. Thus, the dividing line between evidentials and expressions of possibility and necessity is not as clear-cut as was first thought. Much descriptive work has still to be done in order to obtain a clearer picture of the ways in which evidentials function in language and the traditional analyses of possibility/necessity based modality have to be reconsidered in the light of evidentiality.

- (b) *Subjective modality*. Subjective modality plays an overwhelming role in natural language. Modal adverbs express normally subjective modality and even modal auxiliaries are used subjectively in the majority of cases. Yet we

don't have any adequate description of subjective modality at our disposal. Some linguists even doubt the epistemological validity of the distinction between objective and subjective modality, at least in the case of modal verbs. It has become clear, however, that this distinction is grammaticalized in some languages. Moreover, modal adverbials are always used to express speakers' attitudes. Granted that the distinction between subjective and objective modality is viable, two important questions have still to be answered: (i) What is the relationship, if any, between subjective modality and evidentiality?; (ii) How can an adequate description of subjective modality be achieved?

- (c) *The development of modality*. The scheme *ability* → *root modality* → *epistemic modality* seems to be generally valid. Much of the detail remains, however, unclear. For example, can independent motivation be found for the split of root modality into circumstantial/dispositional and deontic/boulomaic modality? Do cross-linguistic data support the claim that ability develops first into circumstantial/dispositional modality? Are practical inferences or conversational implicatures the major factor in the development of modality? Since only objective epistemic modality can figure in the developmental scheme and can thus be related to ability, how can the development of subjective epistemic modality (e.g., probability) be explained? All these questions must be relegated to subsequent research.
- (d) *The pragmatics of modality*. The studies on the pragmatics of modality seem to concentrate on the interactional and discursive functions of modality. Some modal expressions may be considered formulaic (e.g., *May I?*, *Could you (please) ... ?*), they carry by convention a certain illocutionary force. Notions such as 'willingness,' 'intention,' 'insistence' (e.g., in the case of the English modal *will*) receive a distinctive role in the description of the use of modals. The action process is split up into various phases: motivation, goal, planning, decision, execution, result. Each phase can be associated with an assessment or evaluation. Some modal verbs refer to various phases of the action process, others express the speaker's evaluation. But only a few languages have modal verbs; how then are these various functions expressed in languages which lack such verbs? Much current work is devoted to this kind of comparative study.

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## Mood and Modality: Basic Principles

F. R. Palmer

Traditionally, the classical languages and many of the modern languages of Europe have indicative, subjunctive, imperative, and (for Classical Greek) optative moods. English has little or no mood in this sense, but has a set of modal verbs, CAN, WILL, MAY, MUST, etc., whose function is similar to, or at least overlaps, that of mood. Other languages, e.g., German, have both mood and modal verbs, while yet others express similar concepts with particles (*Particles*) and clitics. There is justification, then, for the recognition of a cross-linguistic grammatical category, comparable with the categories of tense and aspect; the most appropriate name for this category is 'modality.' (Language examples of the ideas presented in this article and their sources may be found in Palmer 1986.)

### 1. The Identification of Modality

The main difficulty with establishing modality as a cross-linguistic grammatical category is that, although there are considerable similarities between what appear to be the modal systems of different languages, the semantics is often vague and diffuse, and there is no single semantic feature with which modality may be correlated in the way that a tense can be regarded as the grammatical expression or 'grammaticalization' of time. A number of different ideas have been proposed for the identification and delimitation of modality: attitudes and opinions of the speaker, speech acts, subjectivity, nonfactivity, non-assertion, possibility, and necessity, or, with special reference to the English modal verbs, a group of

concepts that include possibility, necessity, permission, obligation, volition, and ability.

#### 1.1 The Terms 'Mood' and 'Modality'

There is one important terminological problem. The term 'modality' is proposed for the grammatical category under consideration, but traditional studies talk of 'mood.' In its traditional sense mood is a purely morphological category of the verb, and the term will here be restricted to that sense. Mood is, therefore, one way in which modality may be expressed; modal verbs are another. Mood in this sense is not restricted to the languages of Europe; Fula (West Africa) and some dialects of Arabic appear to have subjunctive moods, fairly similar to those of more familiar languages, though in other languages morphologically defined mood systems have rather different functions, for which traditional terms such as 'subjunctive' may not be appropriate.

#### 1.2 Earlier Proposals

The most interesting early proposal is that of Jespersen (1924) who distinguished twenty subcategories of mood (i.e., modality), all expressing 'certain attitudes of the speaker towards the contents of the sentence.' These were divided into two sets distinguished as either 'containing an element of will' or 'containing no element of will,' the former including 'compulsive' (*he has to go*), 'obligative' (*he ought to go*), 'permissive' (*you may go*), etc., the latter 'necessitative' (*he must be rich*), 'dubitative' (*he may be rich*), 'potential' (*he can speak*), etc.

## *Mood and Modality: Basic Principles*

A study of modality in logical terms is that of von Wright (1951), who distinguished four 'modes': alethic, epistemic, deontic, and existential. Of these the two most important for natural language are epistemic ('modes of knowing' which include 'verified,' 'undecided,' and 'falsified') and deontic ('modes of obligation' which include 'obligatory,' 'permitted,' 'indifferent,' and 'forbidden'). These two correspond very roughly to Jespersen's two types and may be illustrated by the two different senses of both MAY and MUST in English: *John may be there by now*, *John must be there by now* (epistemic) versus *You may come in now*, *you must come in now* (deontic).

### **2. Types of Modality and Their Characteristics**

The epistemic/deontic distinction is a useful basis for the study of modality, but the category should, perhaps, be widened to include notions such as willingness and ability; these are included in Jespersen's 'moods' and are expressed in English by the modal verbs WILL and CAN—*He'll come, if you ask him*, *He can read Greek*. These may be characterized in terms of a third type of modality—'dynamic modality' (the term is suggested by von Wright in a footnote). Many linguists, however, do not distinguish deontic and dynamic, but make a binary distinction between epistemic and 'root' modality (see Sect. 2.3).

#### **2.1 Nonfactuality and Subjectivity**

Two features clearly associated with modality are nonfactuality and subjectivity. There is no doubt that they are characteristics of epistemic modality. Thus epistemic MAY and MUST make judgments about the possibility etc., of states of affairs: *John may/must be in his office* draws some kind of conclusion concerning the likelihood of John being in his office. They do not make straightforward statements of facts or categorical assertions, as does *John is in his office*. They are also subjective, reflecting the view of the speaker; although, in theory, epistemic modality could be either objective or subjective, in natural language epistemic judgments are almost always those of the speaker. They are also performative, in the sense that their use is itself the making of the judgment. This is reflected in the grammar, in that epistemic modal verbs do not normally appear in the past tense with past time reference (except in reported speech); the notion that it was possible (in the past) that John was in his office, is not normally expressed by a modal verb (and certainly not by *John might be in his office*, where *might* expresses only a judgment of weaker possibility (see Sect. 6), or by *John may have been in his office*, which makes a present time (and still performative) judgment about a past state of affairs; significantly, MUST does not even have a past tense form. The point is clear: epistemic modals express performative judgments by speakers, and thus can be made only in the present. This is not a feature of

English alone, but is equally true of the epistemic uses of the corresponding verbs of, e.g., French and German (POUVOIR, DEVOIR, MÔGEN, MÜSSEN).

Deontic modality is equally nonfactual. In English deontic MAY and MUST are used as what Searle (1983: 166) calls 'directives' ('where we get [others] to do things'); they give permission and lay obligation for the performance of actions (in the future). They are often subjective, too, in that it is the speaker who gives the permission or lays the obligation; MUST, however, is often fairly neutral in this respect as in *If you want to be rich, you must work hard*, where it is clear that the speaker does not impose the obligation, is merely commenting on the conditions required for becoming rich. Yet it is important to note that English also has HAVE TO (HAVE GOT TO), which is often quite different from MUST in that the speaker is clearly not involved in the obligation as in *He's got to go into hospital*. It is also the case that in English, at least, past tense forms of MAY and MUST (MUST has none) are not used to refer to permission or obligation in the past, though, by contrast, the past tense form of HAVE TO (*had to*) is perfectly regular. This again suggests their subjective and performative nature; but this absence of past tense usage is a characteristic of English alone, and not of, e.g., French or German, which regularly use the corresponding verbs deontically in the past tense with past time reference.

Dynamic modality is clearly not subjective; WILL and CAN express the willingness and ability of the subject of the sentence, not of the speaker. It is less clear whether they are nonfactual, for it may be argued that the statement that someone is willing or able to perform a certain action is a factual one, though it is also true that the event referred to remains potential rather than actual.

#### **2.2 Possibility and Necessity**

The notions of possibility and necessity also seem to be central to modality, in European languages at least. Thus epistemic MAY and MUST express judgments that it is possible or necessary that a certain state of affairs exists, while deontic MAY and MUST express the possibility or necessity for a state of affairs to come into existence. This too is partially reflected in the grammar: in logic 'possible not'  $\equiv$  ('is equivalent to') 'not-necessary', and 'not-possible'  $\equiv$  'necessary not,' and these equivalences are made use of in the negative forms of the modals in English. Thus *John must be in his office* can be negated by either negating the modal judgment ('It is not "necessary" (necessarily the case) that John is in his office') or by negating the proposition ('It is "necessary" that John is not in his office'). But the negative form of MUST is not normally used epistemically; the two concepts of necessity with negation have to be expressed by the forms of the 'possibility' modals MAY and CAN—*John may not be in his office*, *John can't be in his office*.

There are other examples of this use of logically equivalent forms in English, as well as in German and other Germanic languages (though the actual forms and correspondences vary).

Nevertheless, possibility and necessity do not account for all that may be included in epistemic and deontic modality. In addition to MAY and MUST, WILL is used to express epistemic modality—*John'll be in his office now*, and may be said to express a reasonable conclusion (while MAY and MUST express a possible conclusion and the only possible conclusion respectively). A further possible candidate for deontic modality is SHALL, with its sense of commitment or guarantee (often described as a promise or threat), as in *You shall have it tomorrow* (but see Sect. 4.1).

### 2.3 Wider Definitions

Taken together the issues of factuality, subjectivity, and possibility/necessity point to the view that epistemic and deontic form the core notions of modality. Dynamic modality is, perhaps, not strictly a type of modality since it is neither subjective nor, debatably, nonfactual; but it must be admitted that dynamic modality is often expressed in the same formal grammatical system as epistemic and deontic, and that it is not always easy to distinguish deontic and dynamic, especially with MUST and CAN. It is for this reason that some linguists have rejected the distinction between deontic and dynamic, recognizing only the epistemic/root dichotomy. There are, however, other, possible types of modality particularly 'evaluatives' (see Sect. 4.3).

### 2.4 The Grammatical Expression of Modality

The use of modal verbs for the expression of modality is typical of the North European languages. French as well as the Germanic ones, though it is less easy to establish the modal verbs as a grammatically defined set in French than it is in English or German. The classical languages of Europe and many of the modern ones, particularly the Romance languages, express modality in terms of the verbal paradigms—indicative, subjunctive mood, and optative (for the imperative see Sect. 4.2), as well as by a few semi-lexical expressions. Other languages have modal systems that use particles, e.g., Ngiyambaa (Australia), Jacalteco (Guatemala) or clitics, e.g., Luiseño (California).

### 2.5 The Issue of Epistemic and Deontic

The use of the same verbs in European languages to express epistemic and deontic (or root) modality may seem idiosyncratic, since there would appear to be little connection between making judgments about states of affairs and expressing directives to bring about future states of affairs. But the use of the same grammatical forms to express both types of modality is not confined to the languages of Europe. In the Dravidian (South India) language Tamil, the same

suffixes are used to express epistemic and deontic possibility, while epistemic and deontic necessity are expressed by the same forms in both Ngiyambaa (Australia) and Cairene Arabic; there are many other languages that use the same form for both types. It is reasonable to look for an explanation for this. Clearly one feature they have in common is the notion of possibility and necessity: epistemic modality expresses 'It is possible/necessary that (a certain state of affairs exists)' while deontic modality expresses 'It is possible/necessary for (a certain state of affairs to come into existence)'. Sweetser (1982) points out that the epistemic/deontic (root) distinction is relevant elsewhere in the language, in that INSIST, SUGGEST, and EXPECT may be used epistemically (*I expect that he is coming*) or deontically (*I expect him to come*), and suggests that 'the epistemic world is understood in terms of the sociophysical world.' But it must be allowed that there is no one-to-one relation between the two types and that there is a great deal of idiosyncrasy between the uses in different languages.

### 3. Epistemic Modality

In English, and to a large extent other European languages, epistemic modality expresses judgments about states of affairs, and so does not make statements of fact. But there are other ways in which speakers may make utterances that do not commit them to the truth of what is said.

#### 3.1 Evidentials

Many languages have 'evidentials,' devices by which speakers provide the evidence for the proposition that they are presenting. A system of such evidentials is found in Tuyuca (Brazil and Colombia, Barnes 1984), where five suffixes may be used with a sentence translated 'He played soccer' to indicate five different kinds of evidence for the statement (1–5):

- diiga apé-wi (1)  
(I saw him play)
- diiga apé-ti (2)  
(I heard the game and him, but I didn't see him)
- diiga apé-yi (3)  
(I have evidence that he played: his distinctive shoe print on the playing fields. But I did not see him play.)
- diiga apé-yigi (4)  
(I obtained the information from someone else)
- diiga apé-hiyi (5)  
(It is reasonable to assume that he did)

It is apparently not possible to make the simple statement 'He played soccer' without giving the evidence for it. The strongest statement that can be made, and must be made if possible, is the one that indicates visual evidence. Another language with an evidential system is Ngiyambaa, which distinguishes sensory

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evidence (of any of the five senses) and linguistic evidence, though, unlike Tuyuca, it also has unmarked nonevidential statements. An evidential system may be an alternative to a judgment system (Tuyuca vs. English), for both may be seen as epistemic, in the sense that both deal with nonfactual utterances, and thus allow the speaker to avoid total commitment to the truth of what he says. But often evidentials and judgments occur within the same grammatical system. The use of a modal form to express what is said or has been said by others (what may be called 'quotatives') is found in German and other Germanic languages in the verb that corresponds to English SHALL (German *Er soll steinreich sein* 'He is said to be extremely rich'), though the other modals mostly express epistemic judgments or deontic modality. Examples of other languages with formal markers of quotatives are numerous (see Palmer 1986: 71).

### *3.2 Other Types of Epistemic Modality*

There are languages in which the epistemic system is one that indicates the states of knowledge of the speaker and the hearer. Thus in Kogi (Colombia, Hensarling 1984) there are five prefixes, which may be glossed 'remind,' 'inform,' 'ask,' 'doubt,' and 'speculate.' These may all be interpreted in terms of the knowledge of the speaker and hearer as shown by (6):

	[Speaker]	[Hearer]	Gloss	(6)
ni	[+]	[+]	remind	
na	[+]	[-]	inform	
shi	[-]	[+]	ask	
skaN	[-]	[-]	doubt	
ne	[-]	[?]	speculate	

There is a system in Nambiquara (Brazil) that involves two dimensions. One is in terms of the familiar evidential features of observation/deduction/report (quotative); the other is in terms of verification either by the speaker or by both speaker and hearer. It is thus possible to express grammatically 'He worked (I saw it),' 'He must have worked,' 'I was told that he worked,' 'We both saw that he worked,' 'We both deduce that he worked,' 'We both were told that he worked.'

### *3.3 The Status of Interrogatives*

Interrogatives are today usually considered to be one of three 'sentence types,' the others being declaratives and imperatives, and therefore outside the modal system, although traditional grammars treat both the declarative (the indicative) and the imperative as moods. But, as shown above, 'ask' in Kogi can be handled within an epistemic system as an expression of the speaker's lack of knowledge and the hearer's knowledge. There are also several languages from various parts of the world, e.g., Serrano (California), Hixkaryana (Brazil), and Ngiyambaa (Australia), that have a particle which occurs with other modal

particles that express uncertainty, but which in isolation marks a question. Thus in Ngiyambaa (Australia, Donaldson 1980: 257, 260) the 'ignorative' particle is used with the 'counterfactual,' to express 'might have' and with the 'hypothetical' to express 'perhaps,' but in isolation its function is to signal a question, as in (7):

minjan-ga:ma-ndu	dhayi	(7)
what-IGNOR-CONTRFACT-youM	eat-PAST	
'You might have eaten I don't know what'		
guya-gila-ga:lu	dhayi	
fish-HYPOTH-IGNOR-he	eat-PAST	
'Perhaps he ate a fish'		
guya-ga-ndu	dha-yi	
fish-IGNOR-you	eat-PAST	
'Did you eat a fish?'		

In such languages the interrogative is clearly part of the modal system. This is not surprising and, indeed, it may be noted that in English, conversely, asking a question may sometimes merely express the speaker's doubt without expecting an answer.

### *3.4 The Status of Declaratives*

The declarative is often treated as specifically non-modal, in that it presents statements of facts. Yet there are reasons for treating it as a member of the modal system, at least in some languages. First, the indicative is regarded as one of the moods in those languages that have morphological mood. Second, as noted above, it is not possible in Tuyuca to make a statement of fact, without showing its evidential status; the nearest to a declarative is the statement based on visual observation.

A further point about the declarative is that, even if it is formally unmarked, it may not necessarily provide the means of making the most confident statement, though this has often been claimed. In Ngiyambaa (Donaldson 1980: 254–256) there is a system of 'belief' clitics, for 'assertion,' 'categorical assertion,' 'counter-assertion,' and 'hypothesis'; with categorical assertion 'the speaker presents the statement ... as significant for its absolute truth.' Other languages have similar modal forms, e.g., the 'emphatic' in Hidatsa (Siouan, USA) and Imbabura (Quechua, Ecuador). With such forms the speaker guarantees the truth of what is said; it is a matter of knowledge, not of belief. All of these languages also have a form for assertion, i.e., a declarative, which indicates a lower level of confidence, presumably what the speaker believes to be true, not what he knows. In general, moreover, this would seem to be true of declaratives in languages such as English: they are concerned with belief not knowledge.

Moreover, it is not at all certain that, as has sometimes been suggested, a declarative sentence is more confident than one with epistemic MUST: if a hearer



doubts *John is in his office* a speaker might well express greater confidence with *He must be there*. In an overall system of modality it may be best to treat the declarative as the semantically unmarked member of the epistemic system, by which speakers merely present the information available to them, without guaranteeing its truth; it is also, of course, often but not always, formally unmarked.

#### 4. Deontic and Other Modalities

The two-term system of directives (permission and obligation) does not appear to be very widespread throughout the languages of the world, although expressions of these are achieved by a variety of devices, some, but not all, within the modal system of the language. Thus in Ngiyambaa 'must' is expressed by the 'purposive' clitic, which also indicates 'in order to,' and is a term within a formal system that also contains present and past tense, plus imperative and 'irrealis.' (Even in Latin 'should' may be expressed either by the subjunctive mood, or by the impersonal verb *oportet*) (8):

sed maneam	etiam opinor	(8)
but stay + ISS + PRES + SUBJ	still I think	
'But I should stay, I think'		

me igitur	ipsum ames
oportet	
me therefore self	love + 2SG + PRES + SUBJ
it is necessary	
'You should love me myself'	

##### 4.1 Commissives

Although English has only two 'directives', one giving permission (MAY/CAN), the other laying an obligation (MUST), there is a modal, SHALL, that indicates a promise or a threat, and might be treated as a third deontic modal. SHALL is clearly subjective and non-factual, as it is concerned with possible events in the future. It differs from MAY and MUST in that it is not a 'directive,' by which one 'directs' others, but a 'commissive' ('where we commit ourselves to doing things' —Searle 1983: 166). What directives and commissives share is that they point to action in the future. There is a similar feature in other Germanic languages.

##### 4.2 The Status of Imperatives

The imperative (indicated in English by the simple form of the verb, e.g., *Go away!*) seems to belong to the deontic system, but its status in that system is not unlike that of the declarative in the epistemic system. It is a directive relating to future action, but does not indicate its precise deontic status. It is generally supposed that the imperative is used to express commands, but this is not wholly true. *Come in*, for example, usually merely gives permission like MAY, and in *If you want to succeed, work hard*, the imperative has a meaning similar to that of MUST. It might, therefore, be

regarded (in an overall account) as the unmarked member of the deontic system, just as the declarative is the unmarked member of the epistemic system.

##### 4.3 Evaluatives

One other potential type of modality is that of 'evaluatives,' which express the speaker's attitude towards what is said. A striking system is that of Menomini (Algonquian, USA, see Hockett 1958: 237–8) where there are five suffixes, three of which express declarative, quotative, and interrogative respectively, but the fourth and fifth indicate that the events are contrary to expectation (one that an event will, after all, take place, the other that it will not) (9):

pi'w	he comes, is coming, came	(9)
pi'wen	he is said to be coming, it is said that he came	
pi'?	is he coming, did he come?	
piasah	so he <i>is</i> coming after all (despite our expectations to the contrary!)	
piapah	but he was going to come! (and now it turns out that he is not)	

Even in a European language, the subjunctive may be used to indicate something that is true, but towards which the speaker expresses surprise, regret, etc. (see below).

#### 5. Modality in Subordinate Clauses

Most modal expressions have corresponding lexical verbs that are used to report the modality, or to express it performatively. Thus PERMIT may be used in *He permitted him to come* or *I now permit you to come*. It is not unusual for a modal verb to occur in the subordinate clause with epistemic modality (*I think they may be there*), but less common with deontic modality (*I require that they shall come*, but *I order them to come*). Similarly a language that has an evidential marker for the quotative may use it after a verb of reporting, for example, Cashibo (Peru).

The subjunctive mood, on the other hand, is regularly used in subordinate complement clauses in classical European languages for deontic modality; thus the Latin verbs IMPERO 'order' and PERSUADEO 'persuade' require a subordinate clause containing the subjunctive (though, by contrast, IUBEO 'order' does not, but may be followed by the infinitive). It is more widely used as a marker of quotative. Thus in German it occurs (in formal language) after a verb of reporting (or even with a verb of reporting merely 'understood') to show that the sentence indicates only what is reported to be true.

In Latin, verbs of reporting do not require the subjunctive, but in some constructions the use of the subjunctive may indicate that the speaker is merely reporting what has been said, but does not necessarily believe it. Thus a subjunctive after *quod* 'because' indicates a reported reason, but the indicative the real reason (10):

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Aristides nonne ob eam causam expulsus est (10)  
 Aristide INTERROG for that cause expelled is  
 patria quod praeter modum iustus  
 esset

from country because beyond mean just  
 be + 1SG + IMPERF + SUBJ

'Was not Aristides exiled because (it was said) he was  
 excessively just'

Torquatus ... filium suum quod is contra  
 imperium in

Torquatus son his because he against  
 command in

hostem pugnaverāt, necari iussit

enemy fight + 1SG + PLUP + INDIC be killed he ordered

'Torquatus ordered his son to be killed because he had  
 fought against the enemy contrary to orders'

In Spanish the contrast of indicative/subjunctive in a subordinate clause can signal different modalities. After *insisto* the indicative is interpreted epistemically, but the subjunctive is interpreted deontically. With *siento* the indicative provides an epistemic sense with the verb translated 'feel,' but the subjunctive provides an evaluative sense with the translation 'regret' (11):

Insisto que aprende (INDIC) (11)  
 'I insist that he's learning'  
 Insisto que aprenda (SUBJ)  
 'I insist that he learn'

Siento que aprende (INDIC)  
 'I feel that he's learning'  
 Siento que aprenda (SUBJ)  
 'I regret that he's learning'

A surprising point about the verb meaning 'regret' is that the subordinate clause refers to a known fact, whereas with 'feel (that)' the subordinate clause indicates a mere speculation. The uses of indicative/subjunctive are, then, the reverse of what might have been expected, the indicative indicating what is non-factual, the subjunctive indicating what is factual. Only the evaluative nature of the verb, it would seem, accounts for the use of the subjunctive.

The subjunctive is also used in oblique subordinate clauses. It is found, not surprisingly, in purpose clauses in Latin, though the same conjunction (*ut*) is used (still with the subjunctive) to express results. This has worried classical grammarians, because results are factual, but it is interesting to note that in Yidiny (Australia, Dixon 1977: 345–6) the 'purposive' may similarly indicate purpose or result (12):

daḍa ḍuḍumbu garbaḡarbaḡaḷḡu (12)  
 ṇuḍu wawaiḷn  
 child aunt hide + PAST  
 not see + PURP  
 'Auntie hid the child so that it should not be seen'

ḡayu burawuḡal duḡa:l inbiḡinbi:lḡa  
 I Burawuḡal grab + PRES struggle + PURPA  
 'I grabbed the water sprite woman and as a result she  
 kicked and struggled'

Similarly in Latin, *cum* with the indicative translates 'when,' but with the subjunctive it translates (causal) 'since.' But there is often no semantic motivation for the mood; thus the use of the subjunctive in temporal clauses is increasingly common in later Latin. In Classical Greek, Spanish, and Syrian Arabic the indicative is used in temporal clauses that refer to the past, but the subjunctive in those that refer to the future. From this (and from similar phenomena in other languages), it can be shown that there is no general direct correlation between indicative/subjunctive and specific modal contrasts, but that there are language-specific uses of mood to signal certain contrasts. It has been suggested that the subjunctive is primarily a marker of subordination but this is belied by the fact that it can be used in main clauses and is not always required in subordinate ones.

**6. Modality and Tense**

It is not surprising that there are some relations between modality and markers of futurity, since the future is not wholly known, and thus less factual than the past or present. Thus in Homeric Greek the subjunctive may simply indicate the future, and it was noted above that several languages require the subjunctive in future temporal clauses. In English both WILL and SHALL are formally within the class of modal verbs and have some modal functions, yet are also used to refer to future time. Conversely, the (morphologically marked) future tense in French and Spanish is often used to express epistemic 'will.'

More surprisingly, perhaps, the past tense is also used in what seems to be a modal sense, especially in conditional clauses. Many languages have two types of conditionals, one 'real,' the other 'unreal,' the unreal indicating the speaker's belief that the events referred to are improbable. The distinction is clearly made in English by the use of the past tense for the unreal—*If he arrives, she will leave*/*If he arrived, she would leave*. This use of past tense for unreality is very widespread—it has been noted for Classical Greek. Garo (Tibeto-Burman). Tigrinya (Ethiopian Semitic). Tonga (Bantu). Cree (Algonquian. USA), and many others. In English (and other Germanic languages), the past tense forms of the modals also signal increased modality (greater uncertainty etc.) as shown by *He may come* *He might come*, *I can do that for you*/*I could do that for you* etc. There have been several attempts to give a semantic explanation for this use of the past tense (e.g., that the past tense can be remote in either time or in reality) but none have been really convincing.

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## Mood and Modality: Further Developments

F. R. Palmer

In recent years two important conferences and a body of literature have firmly established modality as a valid cross-language grammatical category and, at the same time, have altered views on its basic characteristics. This article is intended as a supplement to *Mood and Modality: Basic Principles*.

Modality is a category that is closely associated with tense and aspect in that all three categories are categories of the clause and are generally, but not always, marked within the verbal complex. In notional terms all three are, in some way, concerned with the event or situation that is reported by the utterance. Tense, rather obviously, is concerned with the time of the event, while aspect is concerned with the nature of the event, particularly in terms of its internal temporal features. Modality is concerned with the status of the proposition that describes the event.

### 1. The Identification of Modality

#### 1.1 *Realis and Irrealis*

In terms of modal status, propositions may be regarded either as 'real'/'factual' or as 'unreal'/'non-factual'. In recent years, however, the terms 'realis' and 'irrealis' have been used for this distinction. These have the advantage of being obviously technical terms and so may avoid any possible connotations of the more familiar terms. As might be expected in a typological study there is considerable variation across languages in regard to what is treated as realis and irrealis. One language may mark questions as irrealis, another may not, and there are similar variations in the treatment of futures, commands, denials, reports etc., but most languages seem to make a grammatical distinction, that can be described, in fairly general terms, as one of realis and irrealis.

#### 1.2 *Mood and Modal Systems*

There are basically two types of system within the grammatical category of modality. One of these is best described as 'mood', the other as a system of

'modal systems', with the term 'modality' used as the name for the overall category.

The first, mood, simply marks all (or almost all) clauses as either realis or irrealis: there is a binary system. An obvious example is the contrast made in some European languages between the indicative and the subjunctive, the indicative marking clauses as realis and the subjunctive marking them as irrealis. A similar distinction (though with rather a different set of notional-grammatical functions) is made in the description of some languages in which the terms 'realis' and 'irrealis' are used for the contrasting grammatical categories. The same terms are thus used for the language specific grammatical categories, for the notional categories and for the cross-linguistic typological categories, but ambiguity can be avoided by referring, where necessary, to 'notionally realis/irrealis' and by using initial capitals for the typological. Generally this is unnecessary and not always helpful. However, it is particularly important to be able to refer to subjunctive and (grammatical) irrealis as both typologically Irrealis. Examples of the indicative/subjunctive contrast from Italian are:

Viene

come + 3SG + PRES + INDIC

'He is coming'

che	venga	anche	lui
that	come + 3SG + PRES + SUBJ	also	him
'Let him come too'			

The realis/irrealis contrast can be exemplified from the Papuan language Amele, as described by Roberts (1990: 371–2). The present is marked as realis and the future as irrealis by the suffixes *-en* and *-eb* respectively on the verb of the subordinate temporal clause:

ho	bu-busal-en	age	qo-igi-na
pig	SIM-run out-3SG + DS + REAL	3PL	hit-3PL-PRES
'They are killing the pig as it runs out'			

ho	bu-busal-eb	age	qo-qag-an
pig	SIM-run out-3SG + DS + IRR	3PL	hit-3PL-FUT
'They will kill the pig as it runs out'			

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*Mood and Modality: Basic Principles* was mainly concerned with modal systems, and nothing more about them will be added here, except to note that there has been considerably more research into evidentials, e.g., in Chafe and Nichols 1986. This has allowed for a more detailed exposition of their functions, without altering our understanding of their basic characteristics.

### *1.3 Subjunctive and Irrealis*

The choice of different terms for the markers of Realis and Irrealis is largely a matter of different traditions. 'Indicative' and 'subjunctive' have been used for traditional studies of the classical and modern languages of Europe and for studies of other languages by scholars familiar with that tradition. 'Realis' and 'irrealis' have been introduced much more recently, the first attested example being, apparently, in Capell and Hinch (1970: 67). Most of the descriptions using this terminology are of Native American languages and the languages of Papua New Guinea. Yet there is no fundamental typological difference between indicative/subjunctive and realis/irrealis. Both express the distinction between the notional features of realis and irrealis and can be identified with the typological categories Realis and Irrealis. There are, however, some differences in the syntactic and semantic functions of subjunctive and irrealis.

First, subjunctive is found mainly in subordinate clauses (see *Mood and Modality: Basic Principles*) and has a far wider range of functions in such clauses than it does in main clauses.

Secondly, irrealis markers are of two kinds, both of which are unlike the subjunctive. In some languages they regularly co-occur with other grammatical markers. An example is Caddo, a language of Oklahoma, for which Chafe (1995: 351–9) reports that pronominal prefixes of the verb may be distinguished as either realis or irrealis and that the choice is determined by sets of grammatical markers that occur with these pronominal prefixes. Thus a realis prefix is used with the future and an irrealis prefix with the prohibitive:

ciyi-bahw-ʔa?  
I + AG + REAL-see-FUT  
'I'll look at it'

kaš-sahʔyi = bahw  
PROH-2 + AG + IRR = see  
'Don't look at it'

Irrealis prefixes in Caddo are used in conjunction with grammatical markers of negation, prohibition, obligation, condition, and also in conjunction with 'simulative', 'infrequentative', and 'admirative' prefixes. In addition to the 'simple negative' prefix, there is also a 'temporal negative' expressing 'not for a long time', and, in addition to the conditional, a 'general conditional' and a 'negative conditional'. Similarly for Amele (see Sect. 1.2) Roberts lists the grammatical

categories that are associated with realis as habitual past, remote past, yesterday's past, today's past, present tense, while those associated with irrealis are future, imperative, hortative, prohibitive, counterfactual/prescriptive, apprehensive.

In other languages irrealis markers are the sole indicators of a set of categories. In Maricopa, a language of Arizona (Gordon 1986: 27, 109), for instance, irrealis alone indicates future, 'possible', 'exhortive' and contrary-to-fact, while realis indicates present and past. Examples of the first two are:

ny-aay-ha  
1/2-give-IRR  
'I will give it to you'  
haat nyi-ttpooy-nt-ha  
dog + pl OBJ + PL-kill + PLACTION-too-IRR  
'It might kill dogs too'

Similarly, in the Papuan language Sussurunga (Bugenhagen 1994: 14–7) irrealis is used to indicate future, imperative, conditional and some types of subordinate clause.

These two kinds of irrealis system may be referred to as 'joint' and 'non-joint' that of Caddo being 'joint' and that of Maricopa being 'non-joint'. But there is no absolute difference between the two, for in Caddo, although realis and irrealis generally co-occur with other grammatical markers, realis alone indicates imperative and irrealis alone indicates interrogative. Conversely, although irrealis alone generally indicates a variety of functions in Maricopa, imperative is indicated jointly by irrealis and a specific grammatical marker.

### *1.4 The Notion of Assertion*

The contrast between what is 'factual' or 'non-factual', 'real' and 'unreal' (and still less 'true' and 'untrue', with their absolute and logical connotations) is not enough to explain fully the notional basis of the realis/irrealis distinction. There is, however, a body of literature in which it has been argued that the use of the subjunctive and indicative is to be accounted for in terms of assertion and non-assertion. The most succinct account is that of Lunn (1994: 430) who links the choice of the indicative to assertion and the choice of the subjunctive to non-assertion. Using examples of subordinate clauses she suggests that a proposition may be unworthy of assertion for three reasons. The first is that the speaker has doubts about its veracity, the second that the proposition is unrealized; these two account for the use of the subjunctive for epistemic and deontic modality, respectively. The third reason is that the proposition is presupposed as in (*Mood and Modality: Basic Principles*, Sect. 5):

Me alegra que sepas  
la verdad  
me it pleases that know + 2SG + PRES + SUBJ  
the truth  
'I'm glad that you know the truth'



This shows that the choice of an Irrealis marker, such as the subjunctive, does not depend simply on the distinction between what is factual and what is not, but between what is asserted and what is not asserted by the speaker. For in the third example, the proposition is factual, but it is presupposed, in the sense that it accepted as true by both speaker and addressee. It is not, therefore, factuality, truth or certainty and the like that is at issue here. Rather it is lack of information value—nothing is being asserted, and it is for this reason that the proposition is treated as irrealis. This notion of assertion also explains the use of subjunctive or irrealis with interrogation or negation, for what is questioned or denied is obviously not being asserted (see Sect. 2.5 and Sect. 2.6).

## 2. Irrealis Categories

### 2.1 Deontic

One type of 'directive', that of obligation, is occasionally associated with Irrealis. Thus it may be indicated by the subjunctive in main clauses in Latin and some of the Romance languages. Permission may be expressed by a 'polite imperative' (below). There are also 'obligatives' in Caddo and Central Pomo, a language of North California (Mithun 1999: 177) that are marked as irrealis.

However, the most striking point is that, although Imperative is not usually instanced by one of the terms in a deontic modal system (see *Mood and Modality: Basic Principles, Sect. 4.3*), it is regularly associated with subjunctive and irrealis. In Latin and some of the Romance languages, for instance, the subjunctive is used for negative imperatives (prohibitions) and for jussives (third and first person 'imperatives'), while in Spanish and Italian it is used (but with a third person verb) as a polite imperative, as in (Italian):

entri	pure
enter + 3SG + PRES + SUBJ	if you please
'Please come in'	

It is also the regular form for reported imperatives, traditionally called 'indirect commands' (see *Mood and Modality: Basic Principles, Sect. 5*).

There is, however, some variation in the treatment of imperatives in respect to realis and irrealis markers. In Central Pomo (Mithun 1995: 376–8) it is one of the categories marked as irrealis, although in Caddo and Maricopa it is realis. In some of the Papuan languages discussed by Bugenhagen (1994) there are two types of imperative, a strong one that is unmarked for mood and a polite one that is marked as irrealis.

### 2.2 Epistemic

Possibility ('may') is expressed by the subjunctive in main clauses in Latin and the Romance languages, while in subordinate clauses it is used after verbs of doubting or negated verbs of belief, but there are only

a few examples of its marking by irrealis. Epistemic necessity ('must') is rarely, if ever, associated with either subjunctive or irrealis.

However, subjunctive may be used for the evidential category of report. In German, for instance, the use of the subjunctive in a main clause may be used to indicate that the sentence simply is a report of what someone else said. Conversely, in Latin, a relative clause within a subordinate clause of reported ('indirect' speech) will be in the subjunctive if it is part of what was said, but in the indicative if it is a comment by the speaker. Similarly the subjunctive in a causal clause indicates that the cause is one that is reported, not one that is given by the speaker (see *Mood and Modality: Basic Principles, Sect. 5*).

### 2.3 Future

One striking difference between the functions of irrealis and subjunctive is that languages with subjunctive usually have a future tense, but languages with irrealis almost always use irrealis to indicate future and realis to indicate past and present future. This is true of all the Papuan languages described by Roberts 1990 and Bugenhagen 1994. It is probably also the case that in many other languages what is described as future tense with a variety of functions would better be treated as irrealis.

However, there are exceptions. In Caddo the future is marked as realis, while in Central Pomo, although future is usually marked as irrealis, it may be marked as realis when the future event is seen as more certain.

There are also a few uses of the subjunctive for future. It is occasionally used to indicate future in Homeric Greek, while it is also used in Latin and Romance languages in temporal clauses referring to the future.

### 2.4 Presupposition

As noted in Sect. 1.4, propositions that are not asserted include those that are presupposed. An example of the subjunctive in a complement clause in Spanish was given above. This example contained a verb expressing gladness, for this use of the subjunctive is often associated with an expression of emotion—joy sorrow, surprise etc. It is not the emotional attitude itself that is relevant, as is often suggested, but the fact that there is no new information. This is shown by the use of the subjunctive after *el hecho que* 'the fact that' in Spanish: (Butt and Benjamin 1988: 221):

el	hecho	que	España	no
tenga			petrolio	explica
	las	dificultades	económicas	
the	fact	that	Spain	not
have + 3SG + PRES + SUBJ	oil		explains	
	the	difficulties	economic	
'The fact that Spain doesn't have any oil explains the economic difficulties'				

## Mood and Modality: Further Developments

Although there is specific reference to a 'fact' here, it is clear that the proposition is not being asserted, but is presupposed. By contrast where the 'fact' relates to new information, the indicative is used (Butt and Benjamin 1988: 229);

No lo hace por de hecho que no le gusta  
not it does for of fact that not her  
please + 3SG + PRES + INDIC  
'She doesn't do it, because she doesn't like it'  
(Lit. 'because of the fact that')

Equally, the subjunctive is also used as a 'concessive', to grant or admit that something may be true, as in Italian:

sia ma io non vengo pure come dici tu  
be + 3SG + PRES + SUBJ perhaps as you say  
but I not come  
'It may be as you say, but I'm not coming'

Again the essential point is that nothing new is asserted, nothing stated as a fact. The proposition is 'presupposed' by both participants, it is shared knowledge. (It is to be noted that even English uses the modal verb *may*.)

An example of a similar use of irrealis is to be found with the category 'admirative' in Caddo (Oklahoma, Chafe 1995: 357):

hús-ba?á-sayi-k'awih-sa?  
ADM- 1 + BEN + IRR-name-know-PROG  
'My goodness he knows my name'

Chafe finds this 'surprising', but it can clearly be accounted for in terms of the proposition not being asserted.

### 2.5 Interrogative

Like Imperative, Interrogative is not usually instanced as a member of a modal system, but it is often marked as irrealis. In Caddo, it is the only category that is marked by irrealis alone (without a co-occurring grammatical category). In Central Pomo, however, it does not affect mood marking.

The subjunctive is never a marker of interrogative in main clauses but is regularly used in subordinate clauses of the type that are traditionally 'indirect questions'.

### 2.6 Negative

Similarly, negatives are marked in Caddo as irrealis, but in Central Pomo they do not affect mood marking. An interesting contrast can be made between the marking of negative imperatives in Caddo and S. Pomo. In Caddo, there is a prohibitive marker that occurs with irrealis:

kaš-sah?yi-bahw  
PROH-2 + AG + IRR-see  
'Don't look at it'

In Central Pomo the imperative is marked as irrealis and is still irrealis when the negative also occurs:

dá wi ʔčh-č-hi khyá swélan?khe-ṭhín  
ʔe ma  
on road stop-SAME-IRR game play-NEG  
it is you  
'Don't stop and play on the way home'

The reasons for the irrealis marking are different. In Caddo the irrealis marking is a result of the fact that negatives are irrealis, but in Central Pomo it results from the fact that imperatives are irrealis.

Subjunctive is used in Romance languages after negated verbs of saying, e.g., in Italian (though the indicative is also possible):

Non dico che lui abbia/ha  
torto  
not I say that he have + 3SG + PRES + SUBJ/INDIC  
wrong  
'I do not say that he is wrong'

It is also used, as noted above, for negative imperatives.

### 2.7 Other Categories

Occasionally other categories are marked as irrealis. Conditional sentences are marked as irrealis in both clauses in most of the Papuan languages described by Bugenhagen (1994). In English, however, unreal conditional sentences are marked by past tense, and the use of past tense in such sentences is widespread in the languages of the world (see Mood and Modality: Basic Principles Sect. 6).

More striking is the use of irrealis with past habitual in the Papuan language Bargam (quoted by Roberts 1990:384):

miles-eq leh-id teq anamren  
aholwaq-ad in didaq tu-ugiaq  
return-SS + IRR go-DS + IRR then owner  
see-SS + SIM 3SG food PERF-give + HAB.P + 3SG  
'When (the pig) would return and go then the owner, on seeing it, used to give it food'

There is a possible explanation for this: although past time reference is usually treated as realis, what is relevant here is that the past habitual does not relate to specific actions in the past, but to a tendency to act. There is a similar use of a habitual marker in a modal system—in Kashaya, a language of California (Oswalt 1986: 40):

men ši-yi?ci?-t<sup>h</sup>i-miy  
this do-PL + HAB-NEG-REM  
'They never used to do that in the old days'

Secondly, it may be relevant that English uses a modal form in such sentences as *We would go for a walk most weekends*.

### 3. Redundancy

A fundamental question is whether the categories of

mood, Realis and Irrealis are coherent and homogeneous cross-language categories. This is disputed by Bybee *et al.* 1994. There appear to be three main arguments.

The first is that the distinction is rarely realized in a language as a simple binary morphological distinction. It is true that there are languages where the system of mood is not binary, but in many languages indicative and subjunctive form a binary distinction, as do realis and irrealis in many of the Papuan languages described by Roberts 1990 and Bugenhagen 1994.

The second is that irrealis and subjunctive are often semantically redundant in that the meaning is carried by some other element in the context. This is largely true of the joint irrealis system, and the subjunctive in subordinate clauses is often determined by the verb or other expression in the main clause. But it is not true of the non-joint systems or of some of the terms in joint systems, such as imperative and interrogative in Caddo and future in Central Pomo. Similarly there is often choice of mood with the subjunctive, especially with verbs of belief in Romance languages where the indicative indicates greater commitment than the subjunctive.

The third is that there is great variation in the notional features marked by them, which makes it difficult to circumscribe a focal meaning. But such variation is found with other grammatical categories and the notion of assertion and non-assertion (and the ways in which they can be interpreted) provides a basis for 'focal meaning'.

The fourth is that some of the notional features appear to be wholly inappropriate. This argument is directed against past habitual in Bargam, but this can be (and has been) explained.

For more detailed discussion see Palmer (*Mood and Modality*, 2nd edn, in press).

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## Moods, Clause Types, and Speech Acts

K. Allan

A speech act is created when speaker/writer S makes an utterance U to hearer/reader H in context C. This entry considers the contribution made to the meaning of a speech act by the mood indicated by clause-type. Suppose a herpetologist says to his/her spouse:

- You never handle the cobra. (1)
- Do you never handle the cobra? (2)
- Never handle the cobra! (3)
- Would that you never handle the cobra! (4a)
- If only you were never to handle the cobra. . . (4b)

These have a common 'phrastic' or propositional content 'H's not ever handling the cobra'; the difference in meaning is indicated by the different moods (clause-types): S makes a statement using the declarative in (1); S asks a question using the interrogative in (2); and S issues an imperative in (3); S expresses a counterfactual using the optative-subjunctive in (4). Because the form of U must be the starting point for H's interpretation of U's meaning, it is reasonable to assume that clause-type is the initial clue to determining the illocutionary point of U. In other words, on the assumption that H determines the illocutionary

## Moods, Clause Types, and Speech Acts

point stepwise from recognition of the primary illocution through the illocutionary point (see *Indirect Speech Acts*), then the primary illocutionary force to be recognized is read off the clause-type. (Fragments like declarative *John* in answer to *Who's that?*, interrogative *John?* [Is that you?], imperative *JOHN!* [Where the hell are you!], optative-subjunctive *If only!* are not a problem.) Grammarians in the Western Classical tradition have recognized a degree of coincidence between clause type and illocutionary force since at least the time of Apollonius Dyscolus (100 AD, cf. Householder 1981: 12f) and probably since 300 BC (cf. Diogenes Laertius 'Life of Zeno' VII, 65–68).

Lyons (1977) argues against the identification of mood with clause-type because in the Western Classical tradition both the declarative and the interrogative are indicative in mood. However, Palmer (1986), in a monograph on the topic, does locate interrogative within the modality system. It is assumed here that clause-type is the formal representation of those aspects of the modal system relevant to a theory of speech acts, whereas modal auxiliaries and adverbs are the forms for other parts of the modality system in a language.

Sadock and Zwicky (1985) surveyed 35 languages representing a wide range of language families and linguistic areas: every one of them distinguishes a declarative to (among other things) make statements, an interrogative to ask things of people, and an imperative to get them to do things. These are the three clause-types orthographically marked—by '.', '?', and '!' respectively. Many languages have clause types with other functions—e.g., optative-subjunctive, expressive-exclamative, prohibitive, imprecativ. English has not only optative-subjunctive but also expressive-exclamative in (mostly monolexical) non-verb idioms of two kinds: (a) those not necessarily addressed to anyone: *Shit! Wow! Goodness gracious!* (b) those addressed to H: *Thanks. Please* [accepting an offer]. *Sorry. Pardon* [= 'Excuse me']. *Hi. Bye. Congratulations. Asshole!* Some of these latter have idiomatic counterparts with verbs, cf. *How do you do? Thank you. Fuck you!* (Some imprecatives seem to be included here.) Most if not all of these expressions have similarly idiomatic counterparts in other languages.

The generalized form of the primary illocution of a declarative clause is as follows:

**Form:**  $\vdash p$  [allowing that possibly ' $p = \neg q$ ' in this and the following definitions]

indicates

**Content:** S says that  $p$  [this may be referred to as a statement]

indicates

**Preparatory condition:** S has reason to believe that  $p$

indicates

**Illocutionary-intention:** S (reflexively) intends U to be recognized as a reason for H to believe that S has reason to believe that  $p$

The generalized form of the primary illocution of an interrogative clause:

**Form:**  $?p$

**Content:** S asks H something [this may be referred to as a request]

**Preparatory condition:** S has reason to believe that H can or might be able to respond appropriately to what is asked in U

**Illocutionary intention:** S (reflexively) intends U to be taken as asking H something.

Bearing in mind that many imperative clauses are not at all imperious (cf. *Forgive me intruding; Excuse me; Let me help you with that; Have a beer; Take the first turning on your left and the third on the right; Have a good day!*) the primary illocution of an imperative clause is:

**Form:**  $!p$

**Content:** S proposes to H that H do A

**Preparatory condition:** S believes that H can do A

**Illocutionary intention:** S (reflexively) intends H to take U as a reason to do A

The primary illocution of an optative-subjunctive:

**Form:**  $!p$  [ $!p$  is nonstandard, there is no standard symbol for the optative-subjunctive]

**Content:** S imagines a world in which  $p$

**Preparatory condition:** S has no reason to believe that it is the case that  $p$  [indeed, S may know it is NOT the case that  $p$ ]

**Illocutionary intention:** S (reflexively) intends U to be taken as a reason for H to believe that S does not believe that  $p$  and S (reflexively) intends H to consider the implications of  $p$  in a world in which it is the case that  $p$

The primary illocution of an expressive-exclamative:

**Form:** An expressive-exclamative idiom

**Content:** S is reacting to  $\Omega$  [ $\Omega$  symbolizes something that has occurred]

**Preparatory condition:** S believes it appropriate to express a reaction to  $\Omega$  (showing some degree of feeling)

**Illocutionary intention:** S (reflexively?) intends U to be taken as expressing a particular (sometimes perfunctorily polite, sometimes strongly felt) attitude toward  $\Omega$ .

The primary illocutions fall into four classes corresponding to Searle's (1975a) notion 'direction of fit': declaratives show a words-to-world fit (the words match the way the world was/is/will be); interrogatives and imperatives both show a world-to-words fit (things are to happen in the world to make it match the phrastic), they differ because S expressly gives H the option not to comply when using an interrogative, whereas with imperatives S expressly gives H no option but to comply; optative-subjunctive clauses show a misfit between words and the world; and for expressives-exclamatives direction of fit is irrelevant.



The recognition of clause type identifies the primary (or initial) illocution in U, but not S's illocutionary point. For instance, depending on tone of voice and the context of utterance, (1) could have various illocutionary points: it could be a comment, a warning, scorn, a challenge, etc. *Can you open the window?* could be a question about the openability of the window, about H's ability to open the window, or a request to have the window opened. In order to determine which of these is meant, H will begin from the primary illocution and draw inferences from S's tone of voice and the context of utterance (C), knowledge of conversational conventions, and often general knowledge, until s/he is satisfied that S's message has been understood. An inferential process of this nature is described in Searle (1975b), Bach and Harnish (1977), Allan (1986) (see *Indirect Speech Acts*).

In this entry nothing has been said about modal auxiliaries because their influence is not particular to speech act theory (though see *Performative Clauses*). And because their relevance to the topic is uncertain, markers of the status of what is being said (evidentials and quotatives) have not been considered here, nor marking of thematic continuity between one utterance and its predecessor.

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## Negation

P. Ramat

Negation in natural languages is very different from, and much more complicated than, negation in logic or mathematics. In many languages, for instance, it is not true that two negations correspond to a positive value according to the well-known formula  $\neg \neg P = P$ . Even in Latin, where *non nullus* ('not nobody') means—according to Classical texts—'somebody,' it is possible to find two negative terms preserving a negative value: *iura te non nociturum esse homini ... nemini* (Plautus) 'swear that you will not harm anybody'; cf. Cockney and Black English *I don't see nothin' nowhere* (for a not perfect correspondence between logical and linguistic negation see also Sect. 2 below).

Consider first the declarative negation which refers to a real state of affairs as in example (1). This declarative negation has to be distinguished from the prohibitive (e.g., 'Do not lean out') which does not refer to a real state of affairs and, on the contrary, is used in order to prevent the realization of a state of affairs (see Sect. 7).

The linguistic operation of negation (NEG) consists in denying the truth value of the negated sentence, or

of a part of the sentence, by applying a NEG operator ( $\pi_{\text{NE}}$ ) to a sentence like:

*John likes to work gives John does not like to work,* (1a)  
i.e., [it is not true that [John likes to work]];

*John does not like beer at lunch* (1b)  
i.e., [John does like beer, [ $\pi_{\text{NEG ADV SATELLITE}}$  at lunch]].

Negative sentences are most frequently used to correct states of affairs assumed by the speaker to be either shared knowledge or to represent the commonest ones to be expected in the context. 'The post hasn't been delivered this morning' is a felicitous message only under the assumption, shared by speaker and hearer, that the post has to be delivered every day. This is the reason why negative sentences are not normally used to introduce new propositions or new referents. The sentence 'A train didn't arrive yesterday,' extrapolated from a situational context which makes a sense possible, is deemed to be rather odd; not so its affirmative counterpart 'A train arrived yesterday.' Another example is *\*When didn't a/the train arrive?*—it does not make sense to ask when an event didn't happen.

## Negation

The content resulting from a negated sentence can be either negative or positive: *I know* → I do not know; *I ignore* → I do not ignore.

There are no known languages which do not possess a means for negating the truth value of a positive sentence. NEG is a linguistic universal: for cognitive and pragmatic reasons every language *must* have the possibility of asserting that the state of affairs expressed by a sentence is not true.

### 1. The 'Scope' of NEG: Sentence versus Phrase Negation

By adducing examples (1a) and (1b), the notion of 'scope' has already been introduced implicitly. The widest 'scope' of NEG (i.e., its sphere or domain of operation) is the sentence (S), but NEG may apply also to sentence subunities, that is, to syntagms (noun phrases, prepositional phrases) or even lexemes:

$s_{NP}[Many\ arrows] hit\ the\ target]$   
→  $s[\pi_{NEG\ NP}[Not\ many\ arrows] hit\ the\ target];$  (2)

$s[Many\ stars\ are\ \pi_{NEG\ PRED}[visible]]$   
→  $s[Many\ stars\ are\ \pi_{NEG\ PRED}[invisible]];$  (3)

$s_{ADV}[Consciously,] Mary\ smiled]$   
→  $s[\pi_{NEG\ ADV}[Unconsciously,] Mary\ smiled];$  etc. (4)

Examples (2)–(4) are affirmative sentences (a negative counterpart of (2) would be 'Many arrows didn't hit the target').

It may be concluded that the phrase/lexeme negation operates by applying a  $\pi_{NEG}$  to the phrase/lexeme to be negated, i.e., by negating the truth condition or the existence of that phrase/lexeme.

But in the following:

*Mary doesn't drive dangerously/like a stunt car driver* (5)

NEG has in its scope just the modal and the sentence makes sense only if the presupposition is that Mary is capable of driving. Only when NEG applies to S and its predicative nexus does a negative sentence occur.

The English sentence:

*You may not read the newspaper today* (6)

has two different intonations (suprasegmental traits) which correspond to two different readings: 'You are not allowed to read the newspaper today' and 'You have the option of not reading the newspaper today.' Only the first interpretation gives a negative sentence; and, in fact, the scope of NEG includes in this case the entire predication. This is not the case with the second interpretation. This is precisely why negative quantifiers (the so-called 'negative pronouns') make a sentence negative (see Sect. 6):

*Nobody knows my sorrow.* (7a)

In other words, 'There is no x such that x knows my sorrow'—the entire predication lies in the scope of 'Nobody'. Note that this holds true also for negative quantifiers in object position:

*John had nothing he knew nobody.* (7b)

Not every language possesses this kind of quantifier. For example, Danish:

*Har du set noget?—Nej, jeg har ikke set noget.* (8a)

Have you seen something?—No. I have not seen something.

'Have you seen anything?—No, nothing.'

versus

*Har du ikke set noget?—Jo, jeg har set noget.* (8b)

Have you not seen something?—Yes, I have seen something.

'Haven't you seen anything?—Yes, I have seen something.'

The opposition between 'nothing' and 'something/anything' is realized syntactically in the context and not lexically, and *noget* acquires a negative meaning if it is in the scope of NEG (*ikke*), as in the answer of (8a) and in the question of (8b).

### 2. Negation and Presuppositions

Commenting on (5), reference has been made to the presuppositions which make a sentence felicitous or not (in Grice's sense). As may be argued from the 'tag question' at the end of:

*They almost sold it, didn't they?* (9)

the sentence is felt to be positive, even though the proposition it asserts entails the negative state of affairs that they did not sell it (see Taglicht 1983: 108).

Conversely, (5) does not imply that Mary does not drive, but, on the contrary, that she drives (cf., also (1b)). What determines the negative effect of  $\pi_{NE}$  and its applications are the pragmatic presuppositions at the discourse and situation level.

### 3. Typology of Negation

The means for realizing  $\pi_{NES}$  show a large crosslinguistic variety, as may easily be seen by comparing the simple declarative negative English sentence (10a) with its translations in various languages:

*John doesn't eat fish* (10a)

French *Jean ne mange pas de poisson* (10b)  
J. NEG eats NEG PART fish  
(vs. *Jean mange du poisson*  
PART + ART)

German *Hans ißt keinen Fisch* (10c)  
J. eats no: ADJ fish  
(vs. *Hans ißt Fisch*  
J. eats fish)

Finnish *Jukka ei syö kalaa* (10d)  
J. NEG-3SG eat fish  
(vs. *Jukka syö kalaa*  
J. eats fish)

Turkish *John balik yemiyor* (10e)  
J. fish eats-NEG-PRES(3SG)  
(vs. *John balik yiyor*  
J. fish eats)

Japanese	<i>John</i>	<i>wa</i>	<i>sakana</i>	<i>wo</i>	<i>tabenai</i>	(10f)
	J.	TPC	fish	OBJ	eat-NEG	
	(vs.		<i>John wa sakana wo toberu</i>			
	J.		fish		eats)	
Welsh	<i>Nid</i>	<i>yw</i>	<i>John yn bwyta pysgod</i>			(10g)
	NEG	is	J. in eat fish			
	(vs. <i>Y mae John yn bwyta pysgod</i>					
	DECL is	J.	in eat fish )			
Russian	<i>Ivan</i>	<i>ne</i>	<i>est</i>	<i>rybu</i>		(10h)
	J.	NEG	eats	fish		
	(vs. <i>Ivan est rybu</i> )					
Guarani	<i>Juan</i>	<i>nd-o'u-i</i>	<i>pira</i>			(10i)
Tupi family	J.	NEG-eats-NEG	fish			

Notice that: (a) In English there exists a special auxiliary verb to form negative sentences, the semantically main verb remaining uninflected; (b) French and Guarani have the so-called 'discontinuous NEG' around the verb (:ne ... pas).—French shows also a morphosyntactic alternation between *de* and *du* depending on whether the sentence is negative or positive; (c) in German the NEG may be expressed by an adjectival inflected form; (d) in Finnish there is an inflected NEG verb whereas the lexical verb remains uninflected; (e) Turkish agglutinates a NEG mark *-ma/-me-* to the verbal accented stem, before other stem determinations (e.g., *-me + yor > -miyor*); (f) the Japanese NEG is a verbal negative form *-nai* suffixed to the indefinite verbal base; (g) and Welsh has a particle (*nid*) introducing NEG sentences parallel to the particles for declaratives (*y*) and interrogatives (*a*, as in: *a mae John yn bwyta pysgod?*) so that NEG is a modality of the sentence. Among the eight languages under scrutiny Finnish is from the typological viewpoint the nearest to English.

The phenomena here underlined by no means exhaust the phenomenology of NEG sentences. Kwaa (Niger-Congo family) expresses NEG via a modification of the word order.

Dravidian languages have the possibility of a negative conjugation for every active, passive, 'neutral,' or even causative verb (and this may remind students of the Welsh examples).

In Tamil the NEG mark is *-ā-*; but this *-ā-* agglutinating with the desinential vowel may disappear. The negative verb is therefore characterized by the absence of a specific mark (one of the not very common examples of unmarked forms for semantically and functionally marked meanings): *kān-p-ēn* 'I shall see'; *kaṇ-ṭ-ēn* 'I saw'; but simply *kān-ēn* 'I do not / I shall not / I did not see.' However NEG forms usually contain one (or more) mark(s) more in comparison with the corresponding positive sentence, for instance (10c) and (10d).

In fact, from a philosophical point of view, it has been said by Bergson that, whereas the positive sentence has to be considered as a judgment, the negative is more complex, being a judgment on a judgment (see example (1) above: [[it is not true that] ...]).

Basically the main strategies for sentence negation are (a) morphological: a NEG mark e.g., (10g), (10h) which can be integrated in the verb, e.g., (10e), (10f); (b) morphosyntactic: NEG is expressed by a particular verbal cluster with a negative auxiliary expressing tense, aspect, mood, and person, e.g., (10a), (10d); however, the verb categories may be distributed between the negative auxiliary and the main verb, as is the case for some Uralic languages. Purely syntactic strategies like specific word order rules as in Kwaa are rather exceptional; (c) lexical: as in (10c). Special lexemes, different from the corresponding affirmative existential verb, can occur for the negative copula 'there is not, there does not exist,' as in Turkish *yok* versus *var*, e.g.:

Tu	<i>Ekme</i>	<i>yok</i>	vs. <i>Ekme</i>	<i>var</i>	(11)
	bread	there is not	bread	there is	
	'There's	no bread'	'There's	bread'	

Östen Dahl published in 1979 a large study on the expression of NEG in around 240 languages, which yielded the following results: NEG is most frequently expressed by either bound morphemes as part of the predicate (45 percent) or by separate particles (44.9 percent). NEG auxiliaries make out only 16 percent of Dahl's sample, while the use of dummy auxiliaries as in English is quite rare.

The expression of NEG (according to Dahl 1979)	%
1. morphologically as part of the predicate	45.0
2. morphologically in an auxiliary verb	16.7
3. by a separate negative particle	
a. in preverbal position	12.5
b. in preauxiliary position	20.8
c. before verbal group	2.1
d. in postverbal position	1.2
e. in postauxiliary position	3.7
4. by a separate negative particle	
a. in sentence-initial position	0.4
b. in sentence-final position	4.2

(N.B. The total runs above 100% because a number of languages have more than one type of NEG)

#### 4. Diachronic Evolution of NEG Markers

In several linguistic traditions a trend can be observed which moves toward the use of an invariant NEG particle (preferably in preverbal position: see below). This is actually the most natural NEG strategy and comes nearest to the transparency ('diagrammatic') principle of optimization, i.e., 'one meaning: one form.' Thus Estonian does not inflect the NEG verb *ei* (3SG) which in this way approaches the uninflected particle construction type, drifting away from the auxiliary construction of the Finno-Ugric languages, that is, shifting from a morphological to a syntactic strategy (see *John ei söö kala* 'J. does not eat fish' but also with a subject in plural *John ja Mary ei kohtunud*

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*koolis* 'J. and M. did not meet at school'; also the extension of *ain't* in Black English as generalized NEG form).

A very interesting case is represented by the French-based creoles:

Louisiana *mo kup pa* and *mo pa kup* (12a)  
                   me cut NEG           me NEG cut:  
                   'I don't cut.'

Mauritius (12b)  
                   *mo môte pa pe travaj*  
                   my watch NEG PROGR work:  
                   'my watch isn't working.'

Guyanese *mo pa ka dromi* (12c)  
                   me NEG FUT sleep:  
                   'I shan't sleep.'

There is a clear tendency to place the NEG marker (<French *pas*, postponed to the inflected verbal form—see (10b)) before the verb and also before tense and aspect markers (*pe*, *ka*). Exactly the same trend has been observed for Maghreb Arabic dialects, where the discontinuous NEG *ma* + verb + *-š* tends to be replaced by a simple preverbal NEG. It may be inferred from this evolution that Jespersen was right in talking of (1917: 5) 'a natural tendency, also for the sake of clearness, to place the negative first, or at any rate as soon as possible, very often immediately before the particular word to be negated (generally the verb),' in other words to construct negative sentences with the verb (i.e., the core of the predication) in the 'scope' of NEG (see Sect. 1). Danish, Norwegian, and Swedish are on the way to reintroducing preverbal NEG and English children may during their learning period produce sentences with preverbal NEG, for example, 'No wipe fingers' though their mother language has NEG after the inflected verbal form ('I do not wipe my fingers'). The same has been noticed also for Japanese adults learning English: though Japanese has NEG suffixed to the verb at the sentence end, as in (10f), students in the first stages of their learning process formed sentences like 'I no want many children,' 'I no like English,' and also 'He don't like it' where 'don't' is clearly perceived as a negation particle, simply a variant of 'no' (see *ain't*, above).

Also, from a diachronic point of view, postverbal NEG usually seems to imply preverbal NEG, via discontinuous NEG. French *pas* derives from Latin *pas-su(m)* 'step.' Together with other Romance NEG particles like French *goutte* 'drop,' Italian *mica* 'crumb,' Catalan *cap* (<Latin *capu(t)*) 'head,' Sursilvan Romansch *buc(a)* (<Latin *bucca*) 'cheek,' etc., *pas* represents a clear instance of a lexeme having developed into a NEG marker (first in postverbal position). The original meaning of *pas* (*goutte*, *cap*, etc.) wasn't at all negative—it was the 'measure' object of the verb occurring in postverbal position, as expected in an SVO language like Late (Vulgar) Latin, for example *non vado passum* 'I do not proceed

a step' (> French [*je ne vais pas*]); *non video guttam* 'I do not see a tear,' meaning 'I'm so blind that I can't even see the tears in my eyes' (> French [*je ne vois goutte*]). The same evolution is found in the above-mentioned Arabic discontinuous NEG: *ma-katabuu-š* (Cairo Arabic) 'they did not write,' where the second NEG form derives from the indefinite accusative *šayʔ(an)* 'thing'—thus 'not + verb + a thing.'

By occurring mostly in sentences with negative meaning, terms like *pas*, *goutte*, *šayʔ(an)*, etc., assumed negative value *per se* and became negative polarity items (NPIS), no longer bound to a semantically congruent verb. Generalization of *pas* as a NEG particle gives *je ne vois pas*. NPIS can thus occur only in negative contexts. But discontinuous constructs like *ne ... pas* are marked constructions and tend to be avoided: only 17 percent of languages (usually of the SVO type) have this kind of NEG. Actually, the preverbal, weakly articulated part of the French negative construct (i.e., [*n*]) is redundant: *je ne vais pas* > colloquial *je vais pas*. The NPI may also be emphatically reinforced—*pas* > *pas du tout*, literally 'not at all,' and become in its turn redundant—*pas du tout* > *du tout*. See, for instance:

*Croyez-vous que je vous blâme? Du tout.* (13)  
 'Do you believe that I blame you? No, I don't.'

Schematically the so-called 'NEG cycle' may be represented as follows (see Schwegler 1988):

*ne* + verb > *ne* + verb + *pas* > verb + *pas* (14)  
 (> *pas du tout* > *du tout*).

The same holds true also for English and German where 'not' and *nicht* derive from *naught*, *nought* < OE *na-wiht* and OHG *niowiht* 'no-whit, no-thing':

English *ne* + verb > *ne* + verb + *not* > verb + *not*; (15)  
 German *ni/en/ne* + verb > *ni/en/ne* + verb + *niht* > verb + *nicht*.

As for the raising of NEG to preverbal position see example (12) from creole languages.

### 5. Pragmatics of Negation

As may be argued from the historical evolution sketched in the previous section, pragmatics plays an important role in NEG strategies, especially because of the wish to reinforce the negative value of the utterance. NPIS like *pas*, *goutte*, etc., are emphasizing expressions which originally served to underline the negative meaning of the sentence and then became grammaticalized as NEG markers. For example, in English 'I heard what you said'—'The deuce you did!' ('You didn't at all') (Jespersen 1917: 33).

As the 'natural' position of NEG is the preverbal one, so that the verb lies in the scope of NEG, it is odd that there are languages like German, Brazilian Portuguese, some Italian dialects, etc., which have postverbal NEG.



The origin of German *nicht* and its postverbal position have already been discussed. In Brazilian Portuguese or other Romance traditions:

(= 10 above) *O João (não) come peixe não.* (16a)

Compare also the very similar Afrikaans construction:

*Jan eet nie vis nie* (16b)  
J. eats NEG fish NEG

where the first NEG comes after the verb, according to the Germanic pattern.

The first *não* may be omitted. Postverbal *não* is, with few exceptions, sentence-final. However, in subordinate clauses one does not find sentence-final NEG:

*Eu imagino que você não tem dinheiro* (17a)  
I imagine that you not have money

and not:

\**Eu imagino que você tem dinheiro não.* (17b)

Note also

*Eu não imagino que você tem dinheiro não* (17c)  
'I do not imagine that you have money.'

The subordinate clause is not negated and the final *não* represents the second NEG marker of the main verb as in (16). This is exactly the case in Afrikaans too:

*He het nie gesê, dat hy hierdie boek* (18)  
*geskrywe het nie*  
he has NEG said that he this book  
written has NEG  
'he has not said that he has written this book.'

All this hints at an 'afterthought' strategy as the origin of the sentence-final NEG, a kind of comment after an intonational break which later disappeared when the final position became grammaticalized as regular. Compare for this kind of pragmatic discourse strategy substandard English *I'm not gonna say it, nah;* or French *J'veis pas le dire, non* (see Bernini and Ramat 1998).

The afterthought strategy may account for sentence-final NEG occurring also in SVO languages like Portuguese. But this is not the only possible explanation. It is clear that diachronically there is a great difference between the *pas* or *not/nicht* cases (ancient postverbal 'measure objects') and that of Portuguese *não*. Synchronically, however, they belong to the same type of NEG. Many different sources may have contributed to the origin of postverbal(sentence-final) NEG (see also the end of this section).

A large-scale analysis of all the languages of the world which have sentence-final or postverbal NEG has however still to be done (see however Kahrel and van den Berg 1993). In any case it seems that word order does not play a decisive role in assigning to NEG its position in the sentence—contrary to what

was thought in the first attempts at typologizing according to the word order types (see Lehmann's 'structural principle' 1978: 18). It is, for instance, not true that the general rule for rigid and consistent SOV languages is to have NEG after the verb as is the case for Sinhalese (SOV) versus, for instance, Irish, a VSO language where NEG comes at the beginning of the sentence:

*Sinh Jōn ballavā dākke nā* (19a)  
J. dog saw NEG

versus

*Ir Ní fhaca Seán an madadh* (19b)  
NEG saw John the dog

both 'John didn't see the dog.'

In Dahl's language sample only Bengali and Tamil are in fact quoted as having the order SOV + NEG, where NEG is an uninflected particle which seems to have developed out of auxiliary verbs (see Dahl 1979: 94). This kind of historical development for syntactic negation has to be noticed as another possible diachronic explanation for sentence-final/postverbal NEG.

## 6. Syntax of Negation: NEG Quantifiers

There is an important topic to be dealt with partly related to what has been said so far about the NPIS, namely the so-called 'permeable' and 'impermeable' negation, which is relevant to the syntax of NEG. The term was suggested by Tesnière (1966: 235 f.). There are languages which repeat the negation on every element of the sentence which can be negated:

*Ru Nikto ni s kem ni o* (20a)  
*čēm ne govoril*  
Nobody NEG with anybody NEG about  
anything NEG spoke  
'Nobody spoke with anybody about anything'

*Ru Nikto nigde nikogda ètogo ne* (20b)  
*skazal*  
Nobody nowhere never this NEG  
said

On the other hand one finds:

*Lat nemo hoc unquam dixit* (21a)  
nobody this ever said

or:

*numquam hoc ullus dixit* (21b)  
never this anybody said

with just one negated element. NEG is not 'permeable.' The same holds for English (for counter-examples from substandard English see the first paragraph of this article):

*Nobody ever said this, or Never did anybody say this.* (21c)

Between the two poles of highest permeability (as in the Russian examples) and highest impermeability (as

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in the Latin and English examples) there are intermediate stages along a 'continuum':

French (22a)  
*Pas une fois il n'a adressé la parole à personne*  
 'He has never spoken to anybody'

versus

Italian (22b)  
*Mai una volta ha rivolto la parola ad alcuno/nessuno*

and not:

\**Mai una volta non ha rivolto ...* (22c)

Italian uses a NEG (or two) less than French.

Returning to (21), (21b): *unquam* and *ullus* are quantifiers (an adverb and, respectively, a pronoun) which usually occur in the scope of NEG and therefore become NPIS. But NPIS which do not (yet) have full negative value must be preceded by a clear NEG mark. See, for instance:

French (23a)  
*Jean n'a pas dormi de la nuit*  
 'John hasn't slept all night long'

where *de la nuit* is on the way to acquiring negative value. However it is not (yet) possible to say:

\**Jean a dormi de la nuit* (23b)

without a clear NEG mark before the NPI (and the verb). On the contrary it is possible to say:

*Je n'imagine pas que Jean ait dormi de la nuit* (24)  
 'I do not imagine that J. has slept at all during the night'

since the NPI appears in a sentence which is subordinated to a negative main sentence. The general rule for these quantifiers therefore is that in negative sentences an element clearly showing negative value must have in its scope (i.e., must precede) the verb and the emphatic elements (e.g. *de la nuit*) on the way of becoming NPIS. Compare also.

Italian (25)  
*Nessuno venne* and *Non venne nessuno*  
 both meaning 'Nobody/no people came.'

If an NPI comes first in a sentence then it means that its negative value has already fully developed, and no other NEG is strictly required before the verb.

It has already been stated that there may also be languages which do not have a lexeme for negative quantifiers (see examples (8a) and (8b)):

Hindi (26)  
*koi nahî âya thâ*  
 somebody NEG come was (same meaning as (25))

(Note that NEG precedes the verb and gives a negative meaning to the sentence.)

Four main types may be distinguished for quantifiers in negative sentences:

- existential quantifier + NEG as in Hindi (example (26));
- 'neutral' (not negative) quantifier + NEG as in English 'John did not see anybody';
- NEG + negative quantifier as in Italian *Giovanni non vide nessuno* (same meaning as the previous English sentence);
- negative quantifier without NEG as in German *Hans hat niemanden gesehen* (same meaning as above).

Otherwise languages may appeal to nonexistential constructions; e.g., Modern Standard Arabic:

fī bilādi- nā laysa dayfan (27)  
 in town IPL NEG:EXIST visitor  
 'Nobody is a stranger in our town.'

Crosslinguistic comparison hints at the following hierarchy of negative quantifiers, when they exist (as in case (c) and (d) above):

	PERS. ANIM. PRON &	NTR. PRON >	TEMP >	LOC >	OTHER ADV <sub>s</sub>
Ru	<i>nikto</i>	<i>ničto, ničego</i>	<i>nikogda</i>	<i>nigde</i>	<i>nikak</i>
Eng	<i>nobody</i>	<i>nothing</i>	<i>never</i>	<i>nowhere</i>	(no way)
Mod Gk	<i>kaneis</i>	<i>tipote</i>	<i>poté</i>	<i>pouθενá</i>	
Sp	<i>ninguno</i>	<i>nada</i>	<i>nunca</i>		
Wel	<i>neb</i>	<i>dim</i> (byd)			

Moreover, inherently negative quantifiers may be restricted to some position. The Australian language Tiwi has *karəkuwani* 'noone' and *karəkamini* 'nothing' which are restricted to subject position (see Payne 1985: 238).

Another phenomenon of the syntax of negation which deserves to be dealt with and can be explained in terms of discourse pragmatics is the so-called 'NEG-raising':

*John wants the secretaries not to leave early* (28a)

and:

*John does not want the secretaries to leave early.* (28b)

These sentences are not completely synonymous. There is indeed a semantic-pragmatic difference. Example (28b) indicates a lesser degree of control on the part of John over the state of affairs, whereas (28a) states as a matter of fact what John's firm wish is. Moreover, the so-called 'raising' of NEG to be observed in (28b) is not possible with every verb. There are semantic constraints: only verbs which admit the possibility of being controlled by the 'subject' (first actant) like *think*, or *want*, may let NEG 'leak' into the main sentence. This is not possible with a verb like *fear*, although it belongs to the same class of opinion verbs as *think*:

*I fear that he will not arrive tomorrow* (29a)

has a completely different meaning than:

*I do not fear that he will arrive tomorrow.* (29b)

Now, a transformation rule (here 'move NEG') governed by semantic criteria is hard to accept in generative theory. Moreover, since there is no hint of any trace whatsoever left by the NEG in its original position before the movement, one cannot decide whether NEG has been 'raised' to the main sentence in (28b) or 'lowered' to the subordinate clause in (28a). There seems to be no use in adopting the generative point of view. The position of NEG is determined by the speaker's intentions of focusing this or that part of the message (see the different message organizations of (28a) versus (28b)).

## 7. Prohibitive NEG

The difference between declarative and prohibitive NEG was indicated above. Prohibitive is linked to imperative modality, which is often expressed by a different verbal form—namely a nonreality form (imperative, subjunctive, optative, etc.). There are languages that make use of the same NEG marker for both, and there are languages which distinguish between them:

*You do not eat fish* (declarative) (30)

as well as:

*Do not eat fish, John!* (imperative) (31)

The distinction rests in this case on the opposition between indicative form with obligatory pronoun and imperative form without pronoun.

On the other hand the following is found:

Mod Gk (Sú) *dén trôs psári* (32)  
you NEG eat: 2SG fish  
(same meaning as (30))

versus:

*Mén pernás, Giánnē* (33)  
NEG cross: 2SG VOC  
'Do not cross, John!'

Notice that in Modern Greek indicative and subjunctive endings may not be distinguished: in this case the opposition is based solely upon the distinction *dé(n)/mē/(n)*. Italian offers the reverse strategy—whereas NEG remains unchanged, the 2SG imperative has a special form:

*Giovanni, non attraversare* (34)  
J. NEG cross:2SG.IMPERAT

versus:

*Giovanni non attraversa* (35)  
J. NEG cross:3SG.INDIC  
'John does not cross.'

Different verbal forms together with different NEG markers are found, albeit redundantly, in (36) versus (37), (38) versus (39):

Anc Gk *mè m' eréθize* (36)  
NEG me make angry:2SG.IMPERAT  
'don't make me angry'

versus:

*ou m' ereθizeis* (37)  
NEG me make me angry:2SG.INDIC  
'you do not make me angry'

Lat *ne cantes* (38)  
NEG sing:2SG.SUBJ  
'do not sing'

versus:

*non cantes* (39)  
NEG sing:2SG.INDIC  
'you do not sing.'

In some cases there may be just an intonation difference:

French *Jean ne traverse pas* (40)  
'John is not crossing'

versus

*Jean, ne traverse pas!* (41)  
'John, do not cross!'

The cognitive-behavioral difference between declarative and prohibitive negation is basic and every language has a means to express the functional opposition. In order to show this large possible variety, the following scale for marking prohibitive negation could be tentatively drawn:

- intonation only (example (41));
- morphosyntax (examples (30/31));
- different markings on NEG (examples (32/33));
- different markings on verb (examples (34/35));
- different markings on both NEG and verb (examples (36/37); (38/39));
- different lexical choice: e.g.:

Lat *noli me tangere* (42)  
don't want:2SG.IMPER me touch  
'don't touch me'

Wel *Peidiwch â siarad!* (43)  
stop:2PL with talk(ing)  
'do not talk'

(see Bernini and Ramat 1996: 113).

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## Nominalizations

P. Muysken

Nominalizations can be looked upon from various perspectives. Syntactically, nominalizations are constructions that have properties of noun phrases but are headed by an element that is to some extent verbal. The word 'headed' in this definition refers, of course, to semantic headedness: the *head* meant is the nominalized predicate. Whether nominalizations have a syntactic head, and which one, is quite another question. Indeed they have been analyzed as exocentric constructions.

The vagueness in the above definition is indicative of the enormous range of constructions which have been called nominalizations in the linguistic literature. At the one extreme, there are cases where the head noun is related to a verb etymologically, but where the construction itself is a typical noun phrase (e.g., *applications for a scholarship* ...). At the other extreme, there are languages in which full clauses receive some kind of marker typical of noun phrases, such as case, but have no nominal characteristics whatsoever in their internal constitution (an example is given from Quechua in (18) below). If only the two extremes existed, nominalizations would be of little interest syntactically: the first type could be described as an ordinary noun phrase, and the second type as a clause in disguise. The problem is, however, that there are a number of cases in between. Therefore, it is better to discuss a number of individual properties of nominalizations separately.

Before this, it should be pointed out that there is also a purely morphological side to nominalizations: through a number of processes verbal stems or roots can be turned into nouns or noun-like elements. These processes may or may not be productive. The morphological issue will be considered first.

### 1. Morphology

In many languages, nouns can be derived from verbs through some morphological process of derivation. The meaning of the resulting nouns is generally related to that of the corresponding verbs, but the

relationships can be very diverse and are far from regular. 'Agentive' nominalizations are often found:

buy/buyer (1)  
hunt/hunter

Through a process of semantic specialization, English *-er* nominalizations have acquired other meanings in addition:

occupation: bake/baker (2)  
habitual: loaf/loafer  
instrument: cut/cutter  
location: sleep/sleeper

A second type of nominalizations is 'action' or 'process' nominalizations. These can take very diverse forms in English:

hunt/hunt (3)  
sell/sale  
involve/involvement  
destroy/destruction

Often these action or process nominalizations can also be interpreted as 'result' or 'state' nominalizations. Thus *sale* can refer to the act and to the result of selling something.

The distinction between agentive and action nominalizations is not limited to English, and the processes of semantic specialization and shift alluded to are more general as well. Nonetheless, other languages may make other distinctions in addition. In the Andean American Indian language Quechua, for instance, there are agentive nominalizations formed with *-q*, and these can undergo specialization and refer to occupations or people in the habit of doing something:

suwa-q 'someone in the act of stealing; thief' (4)  
wacha-chi-q 'someone in the act of helping to give birth: midwife'  
macha-q 'someone in the act of drinking; alcoholic'



Instrumental and locational nominalizations are not derived in the same way, however, in Quechua. These are formed with one of the suffixes used for action nominalizations:

- puqlla-na 'playing (some time);  
plaything, toy' (5)  
puñu-na 'sleeping (some time); bed'

With action nominalizations, a distinction is made between unrealized actions, realized actions, and actions at some unspecified moment:

- puñu-na 'sleeping some time' (6)  
puñu-sqa 'having slept'  
puñu-y 'sleeping in general'

Result nouns can emerge from realized action nominalizations:

- macha-sqa 'having drunk; a drunk' (7)

Comrie and Thompson (1985), in their typological survey, mention languages such as the Californian American Indian language Wappo, which has a special instrumental suffix *-(e)ma*:

- yoʔ-/yok'ema 'to sit/chair' (8)  
kač-/kačema 'to plow/plow'

Undoubtedly other languages possess yet other suffixes to mark specific types of nominals, but the two main types are agentive and action nominals.

In addition to the issue of the lexical semantics of nominalization, there is the question of productivity and regularity. This, in turn, has important consequences for the status of nominalization in the grammar: that is, whether it is lexical or syntactic. In early transformational grammar (e.g., Lees 1960) there was no place for lexical operations. Consequently, all nominalizations were thought of as syntactic, and (9b) was assumed to have been derived from (9a) via a complex set of transformations:

- The enemy destroyed the city. (9a)  
the enemy's destruction of the city (9b)

In an article which heralded the advent of generative morphology, Chomsky (1970) proposes a different solution. He considers three patterns:

- the enemy's destruction of the city (10a)  
the enemy's destroying the city (10b)  
the enemy's destroying of the city (10c)

Pattern (10a) cannot be transformationally derived, in Chomsky's view, for a number of reasons. First, there is a wide range of nominalization processes in English, some of them quite irregular: (*at*)ion, -ment, -al, -age, -y, stress shift, etc. and it is impossible to predict which verb takes which affix. For example, English does not have \*arrivation, \*computage, etc. Second, it is not always possible to predict the meaning of the

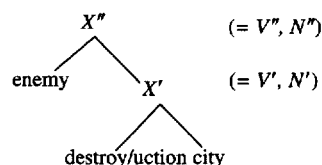
resulting nominalization. *Revolution* means both 'process of revolving' and 'political upheaval'; *deeds* are not just anything one does, but acts that are for some reason significant. Third, some verbs do not have a lexical nominalization associated with a sentence in which they may be used for example:

- \*John's amusement of the children with his stories. (11a)  
\*John's easiness to please (11b)

Finally, lexical nominalizations behave like ordinary nouns: they can be pluralized, take *of*-phrases, etc.:

- John's three proofs of the theorem (12)

For all these reasons, Chomsky preferred having an element such as *destruction* generated directly in the lexicon, while keeping a syntactic derivation for gerunds as in (10b) and keeping an open mind with respect to the mixed type (10c). The fact that there is still a form and meaning relation with the verb *destroy* can be accounted for through a lexical linking rule, which would relate the two lexical entries *destroy* and *destruction* morphologically, or through having a joint entry for both words. Hence the need for a theory of morphology in generative grammar. The noun and the verb can participate in structures which are roughly similar, as can be seen schematically in (13):



The similarity was expressed in the formalism of *X-Bar Syntax* in Chomsky (1970): all categories project syntactic structure, and the projected constituents have the same category as the element from which they are projected. Similarities between the projections of nouns and verbs, as is the case in (9a) and (9b), can be expressed by referring to the level of projection ( $X'$ ,  $X''$ ). Thus, the semantic object, *city*, can be seen as the daughter of  $X'$ , and the semantic subject, in (9) and (13) *enemy*, often termed the 'external argument,' as the daughter of  $X''$ . Category specific rules then determine the precise form in which these arguments are realized.

## 2. Agentive Nominalizations

In many languages, agentive nominals can head a participle clause that can modify a nominal head, and hence function as a 'relative clause.' The examples here are from Quechua (14) and from Turkish (15):

- [hamu- q] runa- ta] riqsi-ni (14)  
come AG man AG know I  
I know the man who comes.



nominalization. In (24a) this is quite possible, but for (24b) the matter is less clear:

[PRO swimming in the locks] is dangerous (24a)

[Such ?PRO neglect of one's own kin] is despicable. (24b)

To what extent does a phrase like 'one's own' demand an antecedent?

### 3.2 Object Properties

With the understood object, similar options are available. In a language such as Turkish (25), the object in a more clause-like action nominal is marked accusative *-i* (when definite), while in Russian (26) more noun phrase-like action nominals genitive case occurs:

Süleyman [Ahmet-in ev -i yap-tığ-ın-ı] (25)

Suleyman GE house AC build NOM1 3 AC

bil-i-yor

know PR3

Suleyman knows that Ahmet built the house.

napolnienie bassejna vodoj (26)

filling swimming-pool-GE water-INSTR

the filling of the swimming-pool with water

A second property of objects that may distinguish different types of action nominals is whether they can have a definite reference or not. In Dutch, expressions such as (27a) are quite frequent, but (27b) is odd:

[mosselen eten] is gezond (27a)  
To eat mussels is healthy.

?[de mosselen eten] is verboden (27b)  
To eat the mussels is forbidden.

It would seem that in clause-like action nominals noun phrases with definite reference are possible, while in noun phrase-like action nominals they are more restricted, as they are in nominal compounds.

### 3.3 Adverbial and Adjectival Modification

A third diagnostic feature is the type of modification occurring. Adjectives are found in noun phrases, and adverbs in clauses. The following contrast (28, 29) illustrates this:

They had a strong disagreement about capital punishment. (28)

Joh's disagreeing so strongly about capital punishment has not made things any easier. (29)

Similar data can be obtained from many languages. What they show is that in some nominalizations, like the one in (29), the structure of the verb phrase is sufficiently intact to permit an adverb. There is a relation between adjective modification and the possibility for the nominalization of being pluralized:

three disagreements (30a)

\*three John's disagreeings strongly (30b)

Similar phenomena are found in other languages as

well, although it should be mentioned that another potential diagnostic for nounhood, case marking, fails. Consider once again a Turkish example (31) similar to (25) above:

ahmet-in ev-i yap-tığ-ın-ı bil-i-yor-um (31)

AhmetGE house AC build NOM1 3 AC know PR 1

I know that Ahmet has built the house.

Here the form *yap-tığ-ın-ı* 'that (s)he has built' is verb-like enough to be able to assign accusative case to its object *ev-i* 'house AC,' but noun-like enough to carry accusative case *-i* itself. Indeed, it is suspected that many cases of clause-like nominalizations involve nominalization precisely so that the clause-final verb can carry the case marking assigned to it by the matrix verb.

### 3.4 Tense and Aspect

With respect to sense and aspect distinctions, the picture is quite complex. The full range of tense and aspect distinctions is generally lost, and in many language lexical, noun phrase-like nominalizations show no aspectual distinctions. An exception is Polish, for which language Comrie and Thompson report the following pair contrasting in perfective/imperfective aspect:

Czytanie tej książki dało dużo radości (32a)  
The reading of this book gave much pleasure.

Przeczytanie tej książki dało dużo radości (32b)

The perfective meaning of (32b) is that here the act of reading is envisaged in its totality, rather than as an ongoing process.

Quechua has maintained some tense distinctions in action nominals, which do not correspond to the past/present/future opposition of the main verb-tense paradigm, but to a distinction between realized (past/present) and unrealized actions:

hamu-na-n-ta yacha-ni (33a)  
come NOM 3 AC know I

I know that (s)he will come.

hamu-sqa-n-ta yacha-ni (33b)  
come NOM 3 AC know I

I know that (s)he comes/has come.

Notice that in English as well only the perfect tense can be marked in gerunds (34):

Mary's having criticized the thesis has caused some unease. (34)

### 3.5 Negation

A final feature that may be used to distinguish different types of nominalization is negation. Noun phrase-like nominalizations often cannot be negated, except by some nominal prefix:

\*the not destruction of Rome (35a)

?the nondestruction of Rome (35b)

## Noun Incorporation

In Quechua, it is possible to negate nominalizations, but the marking is not the full negation of a finite clause:

mana hamu-na-n- ta yacha-ni (36a)  
not come NOM 3 AC know I  
I know that (s)he will not come.

mana hamu-nqa-chu (36b)  
not come 3FU NEG  
(S)he will not come.

Notice in (36b) that there is both *mana* 'not' and the negative particle *-chu*, while in (36a) *-chu* is lacking. The reason is, presumably, that *-chu* forms part of the system of evidentials and finite tense markers, which can not form part of a nominalization.

### 3.6 Conclusion

On the basis of such features as the ones described in Sect. 3.1 to 3.5 it is possible to characterize a wide variety of nominalization types. It might be hoped that there would be some system to this variety, such as the one proposed by Lefebvre and Muysken for Quechua. They claim that nominalizations in that language are very mixed in their properties at their core, the nominalized verb, but that further up in the

projection they become either more noun phrase-like or more clause-like. Other languages, like Turkish or Hebrew, show quite different patterns, however. So far, no one has succeeded in providing a coherent and unified analysis of action nominalizations, taking into account a sufficiently large sample of languages. In recent work, a number of strategies are being pursued in which the nominalizing affix is treated as a functional head, creating a separate syntactic projection.

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## Noun Incorporation

W. J. de Reuse

Noun incorporation refers to the morphological construction where a nominal lexical element is added to a verbal lexical element; the resulting construction being a verb and a single word. The definition cannot be made more precise than that, because there is widespread disagreement over whether the term should only apply to the morphological compounding of a verb stem and a noun stem, a widely held view first proposed by Sapir (1911), or to a morphological process which may be formally either compounding or derivation, a view first proposed by Kroeber (1910). According to the latter view, the verbal element may be either a stem or a derivational element, and noun incorporation is differentiated from other morphological processes because it is also a syntactic process. In the ensuing discussions (Kroeber 1911; Sadock 1980; Mithun 1984; Sadock 1986; Mithun 1986), each side has faulted the other for ignoring relevant data or for considering data that, according to its own definition of noun incorporation, are not instances of that phenomenon. To some extent, this debate has been terminological. Since both definitions

have equally respectable pedigrees, and since the data they account for overlap considerably, it seems best to accept them both as valid. Where they need to be differentiated, they will be distinguished below as the compounding definition and the syntactic definition.

Noun incorporation is often erroneously identified with polysynthesis, because noun-incorporating languages tend to be polysynthetic. However, polysynthetic languages are not necessarily noun incorporating. Denny (1989) has argued that incorporation is a type of polysynthesis, because he views polysynthesis as the combination of morphemes from the major lexical classes such as noun, adverb, and adjective. Surely, this definition of polysynthesis is not narrow enough, since it would characterize any language with productive compounding, such as Germanic, as polysynthetic.

### 1. Noun Incorporation in the Languages of the World

Noun incorporation can be found on every continent but is most widespread in North America. The following is a fairly broad sampling of languages for



which noun incorporation has been reported. The languages or language families for which incorporation is not a productive process have been marked. In Africa: the Eastern Cushitic branch of Afro-Asiatic (Boni, Dasenech, Dullay, Somali (nonproductive)). In Asia and the Pacific: Ainu; Andamanese; Austroasiatic (Temiar and the Munda branch of Austroasiatic: So'ra, Gorum (nonproductive), Kharia (nonproductive)); Austronesian (Fijian (nonproductive), Malagasy, Ponapean); Northeast Caucasian (Dargi); Chukotko-Kamchatkan (Chukchi, Koryak, Kamchadal (nonproductive)); and Nivkh (Gilyak). In Australia: Gugu-Yimidhirr, Gunbalang, Gunwinggu, Gurindji, Kunjen (nonproductive), Ngandi, Pintupi, Pitta-Pitta, Rembarnga, Tiwi (nonproductive), Walmatjari, Yidin<sup>y</sup> (nonproductive), and Yirr-Yoront. In North America and Meso-America: Algonquian; Caddoan; Eskimo-Aleut; Iroquoian (nonproductive in Cherokee, but productive in all other languages); Kiowa-Tanoan; Kutenai; Mayan (Chuj (nonproductive), San Luis Potosi Huastec, Yucatec Maya); Mixe-Zoque (Coatlán Mixe, Sierra Popoluca); Muskogean (nonproductive); Na-dene (Tlingit, and the Athapaskan branch of Nadene (Ahtna, Koyukon, Navajo (nonproductive), Slave)); Natchez (probably nonproductive); Otomangean (Isthmus Zapotec (nonproductive), Huautla de Jiménez Mazatec (nonproductive), Otomí); Salish (Comox); Siouan (Lakota); Takelma; Tarascan; Tequistlatecan (Huamelultec Chontal); Tsimshian (nonproductive); Uto-Aztecan (Comanche (nonproductive), Hopi, Kitanemuk, Nahuatl, Shoshone (nonproductive), Southern Paiute, Yaqui); Washo (nonproductive); Yana; and Zuni. In South America: Araucanian; Nadëb; Tupi-Guarani (Guaraní, Mundurukú, Tupinambá); Carib (Hixkaryana); and Peba-Yagua (Yagua (nonproductive)). Furthermore, noun incorporation exists as nonproductive noun-verb compounding only in other families, such as Indo-European (Germanic, Latin, Romance, Greek, Hindi, and Urdu), and Sino-Tibetan (Ladakhi, Mandarin Chinese, Meiteiron or Manipuri, and Tibetan).

## 2. The Formal Characteristics of Noun Incorporation

In this section, examples are given of the ways in which noun incorporation is formally realized; first, a form without incorporation is given, which is then contrasted with a form with incorporation.

In most languages, noun incorporation is formally realized as a noun + verb compound. For example, in Ainu, the concept 'make a house' may be expressed either as in: (1) *asir tfise tfikar* (*asir* 'new,' *tfise* 'house,' *tfikar* 1st.PLEXCL. 'make') 'we made a new house,' where 'house' and 'make' are separate words, or as in: (2) *nejta tfisekaras* (there house.make.1-PL-EXCL) 'We made a house there,' where the verb *kar* 'to make,' and its object *tfise* 'house' form a single compound word.

Less frequently, noun incorporation may be realized as verb + noun compounding. This type is found in Algonquian (see examples (9) and (38) below), in Araucanian, in So'ra (see (12) below), in Yana, and as a nonproductive process in Dutch and in Frisian. For example, in Dutch, instead of: (3) *hij stampte met zijn voet* (he stamp.PT with his foot) 'he stamped with his feet,' it is possible to say: (4) *hij stampvoette* (he stamp.foot.PT) 'he stamped his feet,' where the verb stem is compounded with the noun, and is followed by the past tense ending.

The incorporated noun can also occur in a fixed position in the word as part of a prefix position class system, as in Athapaskan and Tlingit. In Tlingit, the noun occurs in position 3: (5) *dufa 'awtxixáf* (*du-* 'his,' *-fa* 'head, hair,' *ʔa-* 3rd OBJ in position 2, *-w-* PRFV in position 4, *-ti-* class in position 7, *-xáf* 'cut,' v stem), versus (6) *ʔafawtxixáf* (*ʔa-* position 2, *-fa* 'head, hair' in position 3, *-w-* position 4, *-ti-* position 7, *-xáf* 'cut,' v stem), both meaning 'she cut his hair.'

As far as the incorporated noun stem is concerned, it often lacks the types of affixation it would have when occurring as a free word. For example, in Yaqui (Uto-Aztecan), the free object noun must have an accusative case suffix: (7) *ʔa:po ʔka maisota ʔaimu* (he DET ACC deer.ACC hunt) 'He is hunting a deer,' but the incorporated noun, although it has the same function, cannot have a case suffix: (8) *ʔaipo maiso ʔaimu* (he deer-hunt) 'He is deer-hunting.'

The incorporated noun stem can be truncated. In the Algonquian languages, a type of incorporated noun stem called a medial is often distinguished from the corresponding free stem by truncation of its initial consonant. In Plains Cree (Algonquian), the medial *-askisin-* 'shoe,' to be compared to the free stem *maskisin* 'shoe,' occurs in: (9) *kettaskisineṛw* (*keṭ-* 'take off,' *-askisin-* 'shoe,' *-eṛ-* ANIM INTR, an abstract derivational affix, called a final, *-w* VB INFL) 'he takes his (own) moccasins off.'

Phonological rules like vowel harmony, which have the word as their domain of application, show that forms with incorporation count as a single word, as illustrated by the following Chukchi (Chukotko-Kamchatkan) examples: (10) *aitəyə matqəmət kawkawək kitinín* (father.ERG butter.ABS bread.LOC spread.3SG.SUBJ, 3SG.OBJ AOR) 'The father spread the butter on the bread,' versus (11) *aitəyə kawkaw matqərketenen* (father.ERG bread.ABS butter. spread.3SG SUBJ, 3SG OBJ AOR) 'The father buttered the bread.'

Generally, only one element can be incorporated, but some languages allow two incorporated elements. For example, in So'ra (Munda), both 'mud' and 'leg' are incorporated: (12) *ʒilo:ʔ ʒəntam* (*ʒi-* 'stick,' *-lo:* 'mud,' *-ʔ ʒənt-* 'leg,' *-t-* FUT, *-am* 'you') 'Mud will stick to your leg.'

In a few languages, the verb takes an agreement marker which agrees with the incorporated noun

## Noun Incorporation

itself, as seen in the following examples from Southern Tiwa (Kiowa–Tanoan). The gender and number agreement prefix (labeled A in the examples) is present on the verb regardless of whether there is incorporation or not: (13) *seuanide timūban* (*seuanide* ‘man,’ *ti-* 1st.SG.SUBJ.A, *-mū-* ‘see,’ *-ban* PT), or: (14) *tiseuanmūban* (*ti-* 1st.SG.SUBJ.A, *seuan-* ‘man,’ *-mū-* ‘see,’ *-ban* PT), both meaning ‘I saw the/a man,’ where A agrees with ‘man.’

Another formal type of noun incorporation, occurring in Caddoan, Iroquoian, and some Australian languages, is classificatory noun-incorporation. Here, the incorporated noun is semantically general, and is more narrowly characterized by a specifying external noun phrase (Mithun 1984). In effect, the incorporated noun acts as a classifier for the external nominal. In Caddo (Caddoan), the incorporated element *-tʃʰah-*, literally ‘eye,’ found in the free word *tʃʰahuh* ‘eye’ (*-uh* N SFX), is used as a classifier for small round objects, such as ‘bead,’ in: (15) *kassiʔ hahʔiʃʰásswiʔsaʔ* (*kassiʔ* ‘bead,’ *hak-* PROG, *-ʔi-* empty PFX, *-tʃʰah-* ‘eye,’ *-sswiʔ-* ‘string,’ *-saʔ* PROG) ‘she is stringing beads.’

The examples discussed so far all concern incorporation through compounding. Incorporation can also occur through a formal process of affixation. The Chemakuan, Salish, Tsimshian, and Wakashan families of the North American northwest coast possess a class of semantically concrete affixes called lexical affixes. A Comox (Salish) example of a sentence with a lexical suffix is: (16) *ʔáxʔatʔtʃʰ* (*ʔáx-* ‘be painful,’ *-ʔatʃʰ* LEX SFX ‘throat,’ *-tʃʰ* 1st SUBJ) ‘my throat hurts,’ to be contrasted with: (17) *ʔax tə tʃʰájʔatʃʰ* (*ʔax* ‘be painful,’ *tə* DET, *tʃʰ-* ‘my,’ *sájʔatʃʰ* ‘throat’) ‘my throat really hurts,’ in which ‘throat’ is a free stem *sájʔatʃʰ*. It will be noted that, as is often the case, this stem contains the lexical suffix *-ʔatʃʰ*. Even though these constructions look functionally like noun incorporation, their status is unclear. According to the compounding definition, they obviously cannot be considered to be incorporation since they involve affixation (Anderson 1985; Mithun 1984). By the syntactic definition it could be argued that they are; however, this is not clearly discussed in the literature. An argument for the independence of lexical affixation and incorporation is that Tsimshian, and at least some Salish languages, such as Comox, appear to have both lexical affixes and incorporation by compounding.

Another type of incorporation by affixation occurs in Eskimo: the nominal element is a stem and the verbal element is a derivational affix. A syntactic argument for considering Eskimo as noun incorporating is discussed in Sect. 5.

Finally, in some languages there are certain phrasal constructions which, although they are not one-word constructions, are functionally similar to noun incorporation. These phrasal constructions have been referred to as noun stripping (Miner 1986), or as composition by juxtaposition (Mithun 1984). In

these, the nominal element is stripped of the articles, determiners, and case-marking elements that usually accompany it, but phonologically, i.e., from the point of view of stress or word-internal sandhi phenomena, the nominal and verbal elements remain two separate words. As in incorporation by compounding, the order of elements can be either noun + verb or verb + noun. A phrase without stripping is Ulithian (Austronesian): (18) *ballesi(ya) suku:n kala:* (inspect-TRANS.(OBJ) school DEM. class.PL) ‘inspect those schools,’ to be contrasted with a phrase with stripping: (19) *balle suku:n* (inspect school) ‘inspect schools.’ In Ulithian, a direct object must have a determiner such as *kala:*, which includes a demonstrative and a plural marker, unless it is stripped, in which case it cannot have a determiner. In both constructions, however, *suku:n* remains a separate word. In English, one might contrast: (20) *I keep the house*, (21) *I keep house*, with a stripped noun, and: (22) *\*I house-keep*, a hypothetical back-formation from *house-keeper*, which would be a case of genuine noun-incorporation by compounding, parallel to: (23) *I baby-sit*.

Stripping has been reported for Afro-Asiatic (Coptic); Altaic (Turkish); Austronesian (Indonesian, and the Micronesian languages of that family (Chamorro, Kusaian, Marshallese, Mokilese, Ponapean, Trukese, Ulithian, Woleaian, and Yapese), and the Polynesian languages of that family (Niuean, Samoan, and Tongan), in which it is often referred to as incorporation); Indo-European (English); Sino-Tibetan (Lahu, Mandarin, Chinese); Uralic (Hungarian); and in North and Meso-American languages for Kalapuya; Mayan (Jacalteco, Mam, Kanjobal, and Tzotzil); Muskogean (Alabama); Siouan (Lakota); and Zuni.

In a few languages, it is possible to make a distinction between noun incorporation, noun stripping, and a third intermediate type, which has been called loose incorporation (Miner 1986). In Lakota (Siouan), degrees of stress allow for this three-way distinction. An example of loose incorporation is: (24) *fóta owámna* (smoke I.smell) ‘I smell smoke,’ with two separate word stresses, the second one being reduced. A case of genuine incorporation by compounding, with one main word stress, and apocope of the final vowel is: (25) *sol’ówamna* (smoke.I.smell) ‘I smell smoke.’ The difference in meaning between the two is not clear. Lakota also has noun stripping, where there is no stress reduction on the second element at all: (26) *tʃāté mafítʃe* (heart I.am.bad) ‘I am sad,’ to be compared with the construction with a separate noun phrase: (27) *tʃāté kímáfítʃe* (heart ART I.am.bad) ‘I have a bad heart.’

### 3. Functional Aspects of Noun Incorporation

In order to address the question of what the function of noun incorporation is, three types of partially

overlapping and complementary explanations have been given.

Discourse function explanations view nouns as located on a scale of individuation, where incorporated nouns are consistently less individuated than those that are not incorporated. The typical discourse functions of free and incorporated nouns are given in Table 1; it is important to note that these are nothing but tendencies, since in some languages, incorporation does not appear to have a clear discourse function.

Table 1. Typical discourse functions of free and incorporated nouns.

Free nouns:	Incorporated nouns:
specific	generic
referential	nonreferential
definite	indefinite

Huautla Nahuatl (Uto–Aztecan), as described by Merlan (1976), shows discourse-determined incorporation, and it is used to signal a discourse topic coreferential with a previously occurring noun, while allowing the preservation of the lexical properties of that noun. To the sentence without incorporation: (28) *aske:man tiʔkʷa nakatʰ* (*aske:man* 'never,' *ti-* 'you,' -ʔ 'it' -*kʷa* 'eat,' -Ø PRES.SG, *naka-* 'meat,' -*tʰ* ABS) 'You never eat meat,' a possible response is: (29) *naʔ ipanima ninakakʷa* (*naʔ* 'I,' *ipanima* 'always,' *ni-* 'I,' *naka-* 'meat,' -*kʷa* 'eat,' -Ø PRES.SG) 'I eat meat all the time.' Classificatory noun incorporation, discussed with example (15), has a similar discourse function when the external noun phrase is not repeated in subsequent discourse, and the incorporated noun sufficiently defines the argument involved.

Pragmatic explanations emphasize that incorporated elements tend to be pragmatically nonprominent, in that they signal the informational equivalence of the noun and the verb, i.e., neither is more a topic or comment than the other, and neither is in focus. In Sasse's (1984) discussion of Boni, an Eastern Cushitic language, the following three constructions are contrasted: (30) *hácidoho: bijó:taʔaka* (singulative. woman water-drink.IMP.3SG.FEM) 'The woman drinks water,' with incorporation of *bijó:* 'water,' where neither 'water' nor 'drinks' are in focus; (31) *hácidoho: bijó:é taʔaka* (singulative.woman water.FOC drink.IMP.3SG.FEM) 'The woman drinks water,' where *bijó:* 'water' is in focus; and (32) *hácidoho: bijo átaʔaka* (singulative.woman water FOC.drink.IMP.3SG.FEM), 'The woman drinks water,' where *taʔaka* 'drinks' is in focus.

In semantic explanations of noun incorporation, the emphasis is on the meaning differences between constructions with incorporation and constructions without. In the large majority of languages with noun incorporation, the combination of verb and incorporated noun refers to habitual, permanent, chronic, specialized, characteristic, or unintentional activities or states, or nonlocalized events; whereas

the combination without incorporation refers to temporary, nonspecialized, incidental, or deliberate activities or states, or localized events. In other words, the incorporated construction refers to a more unified concept. In Huautla Nahuatl, (33) *tesiwitʰ wetsi* (*tesiwit-* 'hail,' -*tʰ* ABS, *wetsi* 'fall,' -Ø PRES.SG) 'Hail is falling,' is an appropriate response to the question: 'What is falling?,' but: (34) *tesiwiwetsi* (*tesiwit-* 'hail,' *wetsi* 'fall,' -Ø PRES.SG) 'It is hailing,' is an answer to the question 'What is the weather like?' Similarly, the question: 'Did he hit you?' can be answered with: (35) *ke:na netʰpokonilli ika kʷapilli* (yes, he.me.hit.PRES.SG with stick.ABS) 'Yes, he hit me with a stick,' implying that the hitting was deliberate; or with: (36) *ke:na netʰkʷa apilpokonilli* (yes, he.me.stick.hit.PRES.SG) 'He stick-hit me,' with an incorporated instrumental implying that the hitting was unintentional. A Shawnee (Algonquian) example of this type of contrast is: (37) *hoba-rwiθi nifkafa* (it.is.yellow.V INFL my.fingernail) 'my fingernail is yellow,' versus (38) *no:θa:wiθkafa* (I.be.yellow.fingernail.V INFL) 'I have yellow fingernails.' In Koyukon (Athapaskan), incorporation can also express a characteristic activity, such as moving a body part in a typical manner: (39) *pəjijʰəyastʰə* (*pə-* 3rd.SG.OBJ, -*ji-* 'in,' -*qʰə-* 'foot,' *yə-* MOOD/ASP, *sə-* 1st.SG.SUBJ, -Ø- classifier, -*tʰə* *ə* 'place a long object') 'I stuck my foot in it,' to be contrasted with: (40) *səqəpəjijʰəyastʰə* (*sə-* 1st.SG.POSS, -*qʰə* 'foot') 'I manually picked up my foot (because it was asleep or paralyzed) and put it in it,' without incorporation.

Semantic accounts have also been given for certain properties of the incorporated noun itself. Incorporated nouns are always nonagentive, regardless of whether they are syntactically subject or object; there appear to be no clear cases of agentive incorporated nouns. Other common semantic properties of incorporated nouns, contrasting with semantic properties of the free noun, are shown in Table 2. Again, these are tendencies, which can probably be derived from the more basic restriction against agentive incorporated nouns.

Table 2. Typical semantic functions of free and incorporated nouns.

Free nouns:	Incorporated nouns:
proper	common
human	nonhuman
animate	nonanimate
volitional	nonvolitional
control	noncontrol

According to Axelrod (1990), in Koyukon, incorporation allows a noun to function as a nonagentive subject of transitive or intransitive verbs. Sentence (41), without incorporation, contains a transitive verb with an agentive subject: (41) *John həpəʰətʰ tʰə aŋ* (*həpə-* 3rd.PL.obj, *tʰə* MOOD/ASP, *lə-* MOOD/ASP, & class, 'lies.'SG.ANIM) 'John carried them off,' and contrasts with (42), with incorporation, which contains a

## Noun Incorporation

transitive verb with a nonagentive subject: (42) *tʰoə pəʰəŋ tʰə tʰə ŋə* (*tʰo-* 'water') 'they floated away, i.e., water carried them off.' Incorporation is obligatory with such verbs, since (43) *\*tʰu həpəʰəŋ tʰə tʰə ŋə* (*tʰu* 'water,' the free stem) is ill-formed. With intransitive verbs with a nonagentive subject, incorporation is also obligatory: (44) *həhəʰəŋ tʰə tʰə ŋə* (*hə-* DER.PFX, *həʰəŋ* 'sled,' *tə-* DER.PFX, *i-*MOOD/ASP, *-ə-* class, *-təʰəŋ* 'go'.PL) 'the sleds started off,' but; (45) *\*həhəʰəŋ tʰə tʰə ŋə*, without incorporation, is ill-formed. The semantic characteristics of body parts, as well as their frequent occurrence in characteristic activities, explain why they are prime candidates for noun incorporation. Incorporating them is often the only grammatical way of using them as arguments, as in Huautla Nahuatl: (46) *nijol:ltotomoka* (I.heart.beat. PRES SG) 'my heart is beating,' where it is impossible to express the same concept without incorporating *jol:li* 'heart.'

Bonvillain (1989) has shown that incorporated nouns in Mohawk (Iroquoian) very frequently occur in idioms with metaphorical meanings, in particular when they refer to abstract concepts, such as mind and idea. An example including *-lihw-* 'idea' is: (47) *waʰtkelehwatili:tā* (*waʰ*AOR, *-t-* dual, *ke-* 'I,' *-lihw-*, *-atili:t-* 'pull apart,' *-ā* ASP) 'I discussed it, had a discussion about it,' in which 'to discuss' is literally 'to pull ideas apart.'

### 4. The Integration of Noun Incorporation into Syntactic Models

From a syntactic point of view, incorporated nominal elements can function as subjects (see examples (34), (42), and (44)), and as direct objects (see examples (2), (6), and (8)), the latter appearing to be the most common. The literature on incorporation does not provide any clear cases of indirect object incorporation, which might be due to the fact that indirect objects are almost always agentive and often animate. Incorporated obliques such as instrumentals (see example (36)), locatives (see example (12)), and manner adverbials are frequent. A classical Nahuatl example of an incorporated manner adverbial is: (48) *so:tfikʰ epo:ni in nokʰik* (flower.blossom.PRES.SG ART my.-song) 'my song blossoms like a flower.'

Noun incorporation has been treated as a syntactic process in three models: autolexical syntax, generative semantics, and government and binding theory.

In Sadock's (1980) account of Greenlandic Eskimo, the compounding definition of noun incorporation is explicitly rejected because Eskimo noun incorporation formally consists of the affixation of a verbal suffix to a noun stem. Incorporation in Eskimo is shown to be syntactic because case needs to be assigned to the incorporated element. That case assignment occurs is shown by the fact that if a stranded modifier of the incorporated stem is present, it agrees in case and number with that incorporated element. On the basis

of such facts, Sadock (1985) developed the model of autolexical syntax as a system where multiple tree representations allow noun incorporation to be viewed as a process that is both morphological and syntactic. The following Siberian Yupik Eskimo examples illustrate a sentence without incorporation (49), using the dummy element *pi-* before the verb *-lɣu-* 'to have,' and the corresponding sentence (50), with incorporation of *qikmiɣ-* 'dog,' both meaning: 'He/she has a good dog': (49) *qikmiməŋ pinilɣi:məŋ pilɣu:q* (*qikmiɣ* 'dog,' *-məŋ* INSTR.SG, *pinilɣi-* 'be good,' *-lɣi:* nomin, *-məŋ* INSTR.SG, *pi-*, *-lɣu-* 'have,' *-uq* INDIC.3.SG); (50) *qikmilɣu:q pinilɣi:məŋ* (*qikmiɣ* 'dog,' *-lɣu-* 'have,' *-uq* INDIC.3.SG, *pinilɣi-* 'be good,' *-lɣi:* NOMIN, *-məŋ* INSTR.SG). The stranded modifier *pinilɣi:məŋ* 'good' in (50) is in the instrumental case, agreeing in case and number with the incorporated noun *qikmiɣ-* 'dog.' This incorporated noun cannot have overt case and number marking, because *-lɣu-* is formally a verbalizing derivational suffix and can only attach to stems, not to words with overt inflectional endings. In Eskimo, noun incorporation is thus parallel to the compounding incorporation of Mohawk ((52) below), in that in both types, only the head of a noun phrase incorporates, leaving the modifier stranded.

Transformational-generative accounts of noun incorporation include the generative semantics account of Woodbury (1975), and Baker's (1988) influential government and binding account. In Woodbury's discussion of Onondaga (Iroquoian) noun incorporation, the underlying semantic structure of a sentence with incorporation is considered different from the semantic structure of a corresponding sentence without incorporation, since there is always a difference in meaning between the two. At a later stage in the derivation of a sentence, a lexical insertion transformation replaces semantic material by morphemes.

Baker sees incorporation as a process where a free noun in the deep structure is moved to an incorporated position in the surface structure; consequently, the grammatical relation of the noun is changed. In the theory of government and binding, movements of this sort, effected by the rule move alpha, result in a phonologically null trace of the moved element, which remains in the position out of which the element has been moved. Baker's treatment is illustrated by the Mohawk (Iroquoian) examples (51) and (52). The sentence in (51) has a free subject; this corresponds to (52) where there is an incorporated nonagentive subject and a stranded possessor: (51) *karakā ne sawatis hraonūhsaʰ* (*ka* 'it,' *-rakā* 'be white,' *ne* ART, *sawatis* 'Jean-Baptiste,' *hrao* 'his,' *-nūhs-* 'house,' *-aʰN* SFX); (52) *hraonūhsrakā n sawatis* (*hrao-*, *-nūhs-*, *-rakā*), both meaning 'Jean Baptiste's house is white.' According to Baker's (1988: 20) analysis, the corresponding deep tree structure for (51) and (52) is Fig. 1, and the surface tree structure for (52), after movement, is Fig. 2.



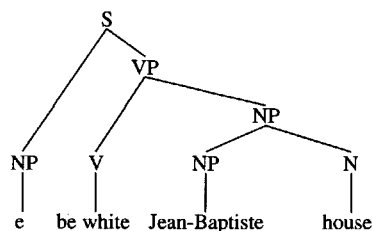


Figure 1. Deep structure of sentences (51) and (52).

Baker's theory is attractive because it predicts that only nonagentives may incorporate. This is because he assumes the unaccusative hypothesis, which states that in deep structure a nonagentive subject, like an object, is dominated by a verb phrase, whereas agentive subjects are not so dominated. Since the principles of trace theory would prevent move alpha from moving a noun that is not dominated by a verb phrase, the fact that only nonagentives may incorporate is explained.

Syntacticians who argue that the evidence for the syntactic definition of noun incorporation is unconvincing and that noun incorporation is a wholly morphological process adhere to the widely held lexicalist hypothesis, which states that morphological processes can only take place in the lexicon and not in any other part of the grammar (Anderson 1985, Mithun 1984). Rosen (1989), working within a government and binding framework, and adopting the lexicalist hypothesis, argues that two types of noun incorporation need to be distinguished: compound noun incorporation, where the argument structure of the verb is satisfied within the incorporated structure, and no modifiers may be stranded; and classifier (= classificatory) noun incorporation, where the verb has the same number of external arguments, and where modifiers may be stranded. The importance of this paper lies in recognizing classifier incorporation in a theoretical model; however, the distinction drawn between compound incorporation and classifier incorporation does not take into account languages such as Eskimo or Southern Tiwa, in which incorporation has one property of compound noun incorporation (argument satisfaction within the noun-verb structure), as well as one property of classifier incorporation (stranding of modifiers).

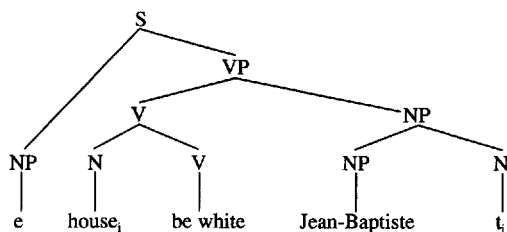


Figure 2. Surface structure of sentence (52).

## 5. Typological and Historical Aspects of Noun Incorporation

Mithun (1984), one of the main proponents of the compounding definition of incorporation, distinguishes four types of noun incorporation, each of which has a distinct functional purpose. In Type I, lexical compounding, the combination of noun and verb denotes a unitary concept or activity; within the incorporated form, the salience of the noun is reduced. Examples are (34), (36), (39), (46), and (47). In Type II, in addition to incorporating a free noun as in Type I, the process advances an argument into the case position vacated by that noun; here the salience of the incorporated noun is reduced within the clause, rather than just within the verb. An example is (11). In Type III, incorporation is used for backgrounding known or incidental information in discourse, thereby reducing the salience of the noun in the domain of that discourse. Examples are (29) and (30). Type IV is classificatory noun incorporation, an example of which is given in (15). An interesting claim is that these four types fall into an implicational hierarchy such that a language with Type IV also has the three other types, a language with Type III also has Types I and II, and a language with Type II also has Type I. Testing this hierarchy with a wide variety of languages is hampered by the fact that drawing functional distinctions of saliency between the four types is often elusive. This classification also implies that incorporation always has a precise function and that there are always syntactic paraphrases for incorporation; however, in languages such as Southern Tiwa, incorporation is often obligatory for purely formal reasons. As shown in (53), inanimate direct objects are obligatorily incorporated in this language: (53) *tifutpeban* (ti- 1st.SG.SUBJ.A, fut 'shirt,' -pe- 'make,' -ban PT) 'I made the/a shirt.'

Mithun's implicational hierarchy also suggests the steps through which noun incorporation develops historically: Types I through IV are claimed to develop in that order. At any stage of this development, noun incorporation may become a nonproductive process. For example, in the Muskogean languages, incorporation has failed to develop past the Type II stage, and has become nonproductive. In Creek, there are only a few incorporable noun stems: *nok-*, related to *-nókwa* 'neck,' as in *nokfajitá* (neck.wring) 'to wring by the neck'; and *fik-*, related to *-fikiki* 'heart,' occurring in verbs for sorrow, fear, and passion, such as *fiksomkitá* (heart.get lost) 'to get scared,' or *fiktjakhitá* (heart.stick up in) 'to get jealous.' Such a lack of productivity can also result in a semantic bleaching of the incorporated element. In Choctaw, another Muskogean language, there is only one incorporated noun element, *nok-* 'neck,' which does not occur as a free stem, but which is obviously related to the Creek stem for 'neck.' Examples of verbs where *nok-* occurs are *noktaka:li* 'to have something stuck in the throat,' and *nokbiki:li* 'to

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be stifled as from overeating.' Furthermore, this element appears to have taken over the semantic functions of what is *fik-* 'heart' in Creek, as in verbs like *nokwannitfi* 'to tremble through fear' (*wannitfi* 'to shake, to tremble'), *noktafa* 'to be jealous,' and even in verbs referring to palpitation: *nokbimikatfi* 'to palpitate,' or *noktimikatfi* 'to beat, pulsate, as the heart or pulse.' It thus appears that Choctaw *nok-* is developing towards an abstract prefixal element, and is farther along in that direction than Creek.

There are cases of noun incorporation, however, which clearly need not have developed along the lines of Mithun's hierarchy. In English, cases of nonproductive noun incorporation such as *to baby-sit*, or *to window-shop*, cannot be conceived of as a decay of a type of productive noun incorporation, since they have been shown to historically arise from back-formation of noun compounds such as *baby-sitting*, or *window-shopping* (Hall 1956).

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## Nouns and Noun Phrases

J. R. Payne

The term 'noun' is used to describe the class of lexical items whose prototypical members refer to entities (*chair, film, leg*), substances (*butter, concrete, blood*), and named individuals or locations (*John, Paris, France*). Traditionally, the term 'noun phrase' has then been used to describe any phrase consisting of a noun as its central constituent (or 'head') and capable of functioning as an argument (e.g., subject or object) in a sentence. Examples, in which the head nouns are in bold type, are: *my big red chair*, *the butter on the table*; *John, who is a lion-tamer*. The structure of noun phrases, which in many respects appears to be as complex as the structure of sentences, has become a controversial issue. While some linguists

maintain that noun phrases are headed by nouns, others insist that the head of a noun phrase should be the 'determiner' (e.g., the definite article *the* in *the butter on the table*). According to these theorists, noun phrases should really be called 'determiner phrases.'

### 1. Nouns

Nouns can be divided into a number of important subclasses based on their grammatical and semantic properties. These subclasses relate to 'definiteness,' 'person,' 'number,' and 'gender,' and they play a major role in determining what categories can co-occur with a given noun in a noun phrase.

### 1.1 Definiteness

One subclass of nouns, the subclass of proper nouns whose prototypical members refer to named individuals or locations, contains nouns whose reference is exclusively definite (i.e., when the speaker uses such a noun, he or she indicates that the hearer will be able to identify the proposed referent by locating some mutually manifest set which consists uniquely of the named individual or location). In some languages, proper nouns are used in conjunction with definite articles (e.g., Greek *o Yanis* (literally 'the John')), which gives a noun phrase whose definiteness is indicated both by the noun and by the article. In other languages, this redundancy may be avoided and a noun phrase may consist of the proper noun alone. The majority of proper nouns in English are of this type (e.g., *John, Paris, France*); however, some proper nouns (e.g., *the Hague, the Netherlands*) require the use of the article.

Opposed to proper nouns are common nouns, for which a distinction between definite and indefinite reference is possible. In indefinite reference, the speaker does not indicate to the hearer that the hearer will necessarily be able to locate a mutually manifest set in which the referent can be found. Indefinite reference is therefore either used when some new entity or substance is being introduced into the discourse (*Yesterday I saw a film in which Meryl Streep played a New York psychiatrist*), or, if a set mutually manifest to both speaker and hearer can be found, to indicate that the referent is not unique within that set. In the sentence *John lost a leg in the war*, a set of two legs belonging to John may be mutually manifest to speaker and hearer, but if only one leg has been lost, indefinite reference is forced (see Hawkins 1991).

In languages which distinguish between definite and indefinite articles, common nouns are able to occur with both. English has definite article *the* and indefinite articles *a* and *some*, giving a contrast between *the film* and *a film*, and *the butter* and *some butter*. With proper nouns, on the other hand, the use of contrasting definite and indefinite articles involves special interpretations: *I met a John at the party, but I don't think it's the person you mean; The John that I met at the party isn't present today*. In this case, it can be said that John has been reclassified as a common noun meaning something like 'person named John.'

### 1.2 Person

Distinctions of person are typically carried by a special class of nouns called personal pronouns, for example, *I* (first person singular), *you* (second person singular), *he/she/it* (third person singular), and *they* (third person plural) in English. These are similar to proper nouns in that they have definite reference, and do not cooccur with the definite article: *\*the you*.

Common nouns are neutral with respect to person. When nouns are used with standard determiners such

as the articles or demonstratives, the noun phrase is usually interpreted as having third-person reference, but, as pointed out by Postal (1966), common nouns can also be combined in English with first-person plural *we* and second-person plural *you* to give noun phrases such as *we students* and *you students*. *We* and *you* can therefore be analyzed as first- and second-person person determiners in English, rather than as personal pronouns.

The neutrality of common nouns with respect to person is especially clear in Nama (Namibia). In Nama, all noun phrases contain a final marker showing the person (as well as the number and gender) of the phrase. These markers are as follows (excluding special plural forms for mixed masculine and feminine phrases):

	Masculine			Feminine		
	Sing	Dual	P1	Sing	Dual	P1
First person	-ta	-khom	-ge	-ta	-m	-se
Second person	-ts	-kho	-go	-s	-ro	-so
Third person	-b	-kha	-gu	-s	-ra	-di

All these markers can be attached to any common noun, giving forms such as *ao-b* (man-third person singular) or *ao-khom* (man-first person dual). The third-person pronoun *||i* behaves like any other noun, except of course that it can only be followed by third-person markers: *||i-b* 'he,' *||i-s* 'she,' etc. In addition, Nama also has determiners representing first and second person:

	Sing	Dual/Plural
First person	<i>ti</i>	<i>si</i>
Second person	<i>sa</i>	<i>sa</i>

These occur in initial position in first- and second-person noun phrases to give forms such as *si ao-khom* 'we (two) men.'

The first- and second-person 'personal pronouns' of Nama are formed simply by combining the relevant determiner and noun-phrase suffix, for example, *ti-ta* 'I,' *sa-kho* 'you (dual),' *si-khom* 'we (dual, excluding the hearer),' *sakhom* 'we (dual, including the hearer).' In this case, as for English *we* and *you* (plural), it can be argued that no noun root as such is present in the noun phrase.

### 1.3 Number

Common nouns can be divided into those which can be counted (count nouns, like *chair*), and those which cannot (noncount nouns, like *butter*). Count nouns are able to cooccur with low numerals (*one* if they are singular, and *two* if they are plural), for example, *one chair, two chairs*. The use of low numerals with noncount nouns leads to unacceptability, for example, *\*one butter, \*two butters*, unless the noun in question is reclassified as a common noun with a different and countable interpretation, for example 'type of butter' or 'pat of butter.'

Count nouns may refer to sets consisting of one

## Nouns and Noun Phrases

entity, or more than one entity, and this is the basis for number distinctions in language such as singular and plural. It is necessary, however, to distinguish between grammatical and semantic number. In English, collective nouns such as *family* are grammatically singular since they cooccur with grammatically singular forms of noun-phrase modifiers such as the singular indefinite article *a* and the singular demonstratives *this* and *that*: *a family*, *this family*, *that family*. Equally, *family* has a grammatically plural form *families* which cooccurs with the grammatically plural indefinite article *some* and the grammatically plural demonstratives *these* and *those*: *some families*, *these families*, *those families*. However, the grammatically singular form *family* can be thought of as referring semantically to a set consisting of its individual members, and this is reflected in the possibility of plural verb agreement: *All the family are coming to the wedding*.

Conversely, in some languages it is possible to find grammatically plural nouns which are semantically singular. For example, the Russian noun *čas* 'clock' is grammatically plural since it is modified by plural forms of the demonstratives *tot* 'that' and *etot* 'this': *te časy* (that-plural clock) 'that clock,' *eti časy* (this-plural clock) 'this clock.' Its semantic singularity is shown by its ability to cooccur with the numeral *odin* 'one,' which also has a grammatically plural form especially for use with such nouns: *odni časy* (one-plural clock) 'one clock'! English nouns like *scissors*, which appear similar (e.g., *those scissors*, *these scissors*), are grammatically plural, but noncount. One cannot say *\*one scissors*, but must add the count noun *pair* for the numeral to be possible: *one pair of scissors*.

While count nouns typically have both grammatically singular and grammatically plural forms in English, there are a few like *remains* which are only plural (*\*this remains*, *these remains*). Note that nouns like *sheep* are count nouns with both a singular and plural form (*this sheep*, *these sheep*): the singular and plural forms in this case just happen to be the same.

### 1.4 Gender

Nouns have different genders if they fall into different agreement classes, that is, if they cooccur with different agreeing forms of other categories such as noun-phrase modifiers, predicates, or pronouns.

In English, gender distinctions are absent from noun-phrase modifiers like adjectives, articles, and demonstratives, and from predicates. However, relative pronouns distinguish between 'personal' nouns which are referred to by *who* and 'nonpersonal' nouns which are referred to by *which*, and singular personal pronouns distinguish between 'masculine' nouns (referred to by *he*), 'feminine' nouns (referred to by *she*), and 'neuter' nouns (referred to by *it*). The distinction between 'personal' and 'nonpersonal' is not quite the

same as that between 'human' and 'nonhuman,' since familiar animals such as pets can be referred to by *who*, and unfamiliar babies can be referred to by *which*. Nor is it the same as the distinction between 'animate' and 'inanimate,' since both animate nouns like *sheep* and inanimate nouns like *box* are referred to by *which*.

This then gives essentially the following gender classes in English:

(a) personal masculine nouns (who/he):	<i>uncle</i>
(b) personal feminine nouns (who/she):	<i>aunt</i>
(c) nonpersonal neuter nouns (which/it):	<i>box</i>
(d) nonpersonal feminine nouns (which/she):	<i>ship</i>

Some nouns belong to more than one class. For example, *doctor* can be both personal masculine and personal feminine; *ship* can be nonpersonal neuter as well as nonpersonal feminine. In the plural, the distinction between masculine, feminine, and neuter is neutralized (the personal pronoun is always *they*, and the only gender distinction which is preserved is between 'personal' and 'nonpersonal').

In some languages, meaning alone suffices to determine distinctions of gender (English is basically of this type). In other languages, however, information about the form of the noun (e.g., declension class, phonological form) is also required. In Russian, for example, nouns fall into a few major declensional classes, each of which is associated with a particular gender: *dom* (first declension) 'house' is masculine, *ruka* (second declension) 'arm, hand' is feminine, *skorost* (third declension) 'speed' is feminine, and *okno* (fourth declension) 'window' is neuter. This may lead, as with number, to discrepancies between grammatical and semantic characteristics of particular nouns. For example, the Russian noun *djadja* 'uncle' belongs to the second declension class, but in this case the semantic characteristic takes precedence and agreeing forms are invariably masculine (e.g., *moj djadja* (my-masculine uncle) 'my uncle'). The noun *vrač* 'doctor' belongs to the first declension, but when referring to a female doctor may be used with either masculine or feminine agreeing forms. In this case, feminine agreeing forms are more likely with pronouns and predicates than with noun-phrase modifiers like adjectives (Corbett 1991). The similarity with the number agreement of collective nouns in English is striking, since here, too, semantic agreement is found with pronouns and predicates.

### 2. Noun-phrase Modifiers

Noun phrases are traditionally thought of as consisting minimally of a head noun, together with any number of noun-phrase modifiers. Typical noun-phrase modifiers are determiners, quantifiers and quantifier phrases, adjectives and adjective phrases, nouns and noun phrases, adpositions and adpositional phrases, and clauses.



## 2.1 Determiners

Determiners form a closed class of functional words which have the general property of not themselves permitting modification. The class of determiners includes articles, personal determiners, demonstratives, interrogative determiners, exclamatory determiners, and quality determiners.

### 2.1.1 Articles

Articles have the function of simply indicating definite or indefinite reference, without containing any identification within themselves of the place where the referent(s) can be located. The English articles are definite *the* and indefinite *a* or *some*. In indefinite reference, *a* is used with singular count nouns, and *some* with noncount and/or plural nouns. Examples are: *the film*, *the butter*, *the films*, *a film*, *some butter*, *some films*. Many languages lack articles altogether (e.g., Russian, Lithuanian).

### 2.1.2 Personal Determiners

Personal determiners are determiners which indicate the person of a noun phrase. In English, the personal determiners are *we* and *you* (plural), which can cooccur with grammatically plural common nouns. Examples are: *we students*, *you students*. Nama (see Sect. 1.2) has both singular and plural first- and second-person determiners. Since personal determiners invariably seem to indicate definiteness, it might be argued that they are simply first- and second-person forms of the definite article. However, the definite article in English does not necessarily imply third-person reference: for example, in an appositional construction like *we, the students*, the first-person personal determiner and the definite article can cooccur. It seems better to treat the usual interpretation of third-person reference induced by the definite article as an implicature which can be canceled if the context requires it.

### 2.1.3 Demonstratives

Demonstratives serve generally to indicate the location of the intended referent(s) of the noun phrase with respect to the context of utterance. English demonstratives are *this/these* and *that/those*, which cooccur with common nouns and have a distinction of grammatical number. Examples are: *this box*, *these boxes*, *that box*, *those boxes*. The distinction between *this/these* and *that/those* is one of closeness to and distance from the speaker. In some languages, further distinctions based on closeness to and distance from the hearer can also be found, as well as more recondite distinctions based on visibility and topological factors such as 'uphill' and 'downhill,' 'upriver' and 'downriver.' For example, Dyirbal (Australia) has basic forms *giyi* (meaning that the referent is visible and here), *bayi* (meaning that the referent is visible and there), and *ɲayi* (meaning that the referent is not visible). To any basic form can be suffixed one of a

set of twelve morphemes indicating distance uphill or downhill, distance upriver or downriver and/or one of a set of three morphemes indicating 'up' (vertically), 'down' (vertically), or 'out in front' (with respect to which way either speaker or hearer is facing; Dixon 1972). It should be noted that demonstratives may indicate definiteness, as in English, or may be neutral with respect to definiteness, as in Dyirbal.

### 2.1.4 Interrogative Determiners

Interrogative determiners are forms like *which* and *what* in English. Examples are: *which box?*, *what box?*

### 2.1.5 Exclamatory Determiners

Exclamatory determiners are forms like *what* in English. Examples are: *what a fool!*, *what fools!* Note that the exclamatory determiner *what*, unlike the interrogative determiner *what*, must cooccur with the indefinite determiner *a* when determining a singular count noun.

### 2.1.6 Quality Determiners

Quality determiners are forms like *such* in English. Examples are: *such a fool*, *such fools*. Like the exclamatory determiner *what*, this form requires the indefinite determiner *a* when determining a singular count noun.

## 2.2 Quantifiers and Quantifier Phrases

Quantifiers have the general function of indicating the quantity of elements referred to by the noun phrase. Unlike determiners, they permit various kinds of modification and therefore have their own phrasal structure.

In many cases, quantifiers permit the same kinds of modification as adjectives, and might therefore be treated as a special subclass of adjectives. The quantifier *many* in English, for example, permits premodification by the adverb *very* (e.g., *very many boxes*), and has comparative and superlative forms (*more boxes*, *most boxes*).

Typical quantifiers in English are: *all*, *both*, *half*, *every*, *each*, *any*, *either*, *some*, *much*, *enough*, *several*, *many* (*more*, *most*), *a few*, *few* (*fewer*, *fewest*), *a little*, *little* (*less*, *least*), *neither*, *no*, together with the cardinal numerals *one*, *two*, *three*, etc. Examples are: *all the boxes*, *enough boxes*, *few boxes*, *no boxes*, *two boxes*. With modification of the quantifier, it is possible to form quantifier phrases: *virtually all the boxes*, *not nearly enough boxes*, *indescribably few boxes*, *absolutely no boxes*, *almost two boxes*.

## 2.3 Adjectives and Adjective Phrases

Adjectives and adjective phrases are noun-phrase modifiers par excellence. As well as general adjectives like *red*, *large*, *round*, and *brave*, the class of adjectives in English includes ordinal numerals such as *first* and *second*, related adjectives such as *next* and

## Nouns and Noun Phrases

last, adjectives such as *same* and *other*, and arguably the whole class of quantifiers (see Sect. 2.1).

In some languages, the class of adjectives may be extended to include possessive adjectives, for example, Italian *mia* in *la mia casa* (the my-feminine singular house-feminine singular) 'my house,' and in others, according to Dixon (1977), it may be severely reduced or nonexistent (the concepts being expressed by forms which can be classified as nouns or verbs).

Adjectives in English are generally positioned between determiners and the head noun, for example, *that first brave attempt*, *a large red apple*. While there is a certain natural ordering relationship between the adjectives themselves, orders which deviate from this ordering are typically possible: *that brave first attempt*, *a red large apple*. Even quantifiers, which in English typically occupy positions close to (or in complementary distribution with) the determiners, may occur in differing orders with ordinary adjectives: *those two first brave attempts*, *those first two brave attempts*, *those brave two first attempts*.

Adjective phrases in English may be formed by premodification of the adjective by adverbs, or postmodification by prepositional phrases and clauses: *very proud*, *proud of her achievements*, *proud that she had won so easily*. The type of modification has an influence on the order of noun head and adjective-phrase modifier within the noun phrase. Only premodified adjective phrases pattern with single adjectives in occurring before the head noun: *a very proud woman*. Postmodified adjective phrases must occur after the head: *a woman proud of her achievements*, *a woman proud that she had won so easily*.

### 2.4 Nouns and Noun Phrases

Nouns themselves may act as noun-phrase premodifiers. For example, it can be argued that, in English noun phrases like *a plastic factory*, the item *plastic* is a noun rather than an adjective. The evidence for this is that *plastic* can itself be modified by an adjective such as *corrugated* to give *a corrugated plastic factory* (= a factory which makes corrugated plastic). Adjectives themselves do not permit modification by adjectives, so there is no alternative but to consider *plastic* as a noun.

It should be noted that noun-phrase modifiers of this type cannot contain determiners, although they may contain quantifiers: *a party committee*, *\*a that party committee*, *a two-party committee*, *an all-party committee*.

### 2.5 Adpositions and Adpositional Phrases

Adpositions are prepositions or postpositions, typically taking noun-phrase complements. Prepositional phrases are a common form of noun-phrase postmodifier in English: *the man on the roof*, *a box without a lid*, *the room underneath the eaves*. Some prepositions can occur alone as postmodifiers: *the room underneath*.

On the other hand, postpositional phrases in English with the 'genitive' postposition *-s* are premodifiers with a variety of functions including the possessor function (*the king's crown*), the subject function (*the king's decree that windows should be taxed*), the object function (*the king's execution*), and the descriptive function (*a women's hall of residence*).

Phrases of the first three types in English induce the so-called 'definiteness' effect, that is, *the king's crown* means 'the unique crown belonging to the king,' and not 'a crown belonging to the king.' In order to express the indefinite meaning, the 'double genitive' is used in which the preposition *of* governs a postpositional phrase with *-s*: *a crown of the king's*.

While phrases of the first three types are in complementary distribution in English with the determiners (i.e., *Edward's richly jewelled crown* and not *\*that Edward's richly jewelled crown*), this is not universally the case. In Finnish, for example, the premodifying possessor and demonstrative are compatible: *nuo Aimon koirat* (those Aimo-genitive dogs) 'those dogs of Aimo's.' There therefore seems to be no general basis for considering premodifying possessor, subject, and object phrases as themselves 'determiners.'

Descriptive 'genitive' phrases of the fourth type have an entirely different distribution. They are compatible with all the determiners and typically occur close to the head noun, after any adjective phrases: *a very pleasant women's hall of residence*.

### 2.6 Clauses

Clause modifiers can be divided into two major types: relative clauses, and complement clauses.

Examples of relative clauses in English are:

- |                               |                       |
|-------------------------------|-----------------------|
| (a) the Eskimos, <i>who</i>   | <i>live in igloos</i> |
| (b) the Eskimos <i>who</i>    | <i>live in igloos</i> |
| the Eskimos <i>that</i>       | <i>live in igloos</i> |
| (c) the Eskimos <i>who(m)</i> | <i>you met</i>        |
| the Eskimos <i>that</i>       | <i>you met</i>        |
| the Eskimos $\emptyset$       | <i>you met</i>        |

The relative clause *who live in igloos* in (a) is 'non-restrictive,' in that it provides additional information about the referents of a noun phrase, *the Eskimos*, whose identity has already been established. By contrast, the relative clauses in (b) and (c) are 'restrictive,' in that the information contained in the relative clause serves to restrict the intended referents to those who satisfy the condition expressed in the relative clause. For example, the relative clauses in (b) restrict the reference to a subset of the set of Eskimos, those who happen to live in igloos.

Nonrestrictive relative clauses in English always begin with a 'wh-phrase' containing a 'wh-word' like *who* or *which*. Restrictive clauses may, however, begin with a wh-phrase, or the subordinating conjunction *that*, or zero (symbolized by  $\emptyset$ ). Zero, however, is not

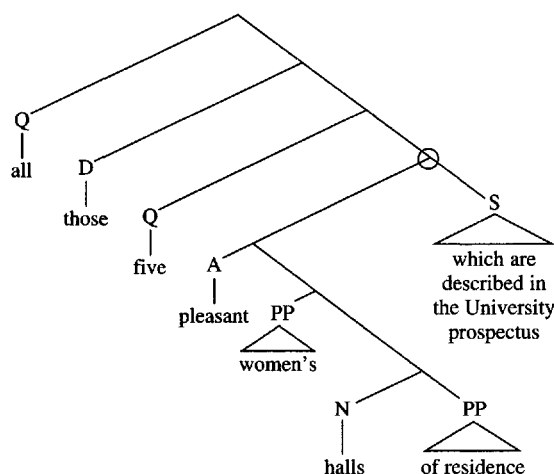


Figure 1. Q = Quantifier, D = Determiner, A = Adjective, PP = Post-positional or Prepositional Phrase, N = Noun, S = Relative Clause.

permitted when the 'position relativized' (the position in the relative clause which represents the role played by the intended referents) is the subject position as in (b), rather than the object position as in (c).

The relative clauses in (a), (b), and (c) are based on the finite verb forms *live* and *met*. However, in many languages, relative clauses are essentially based on nonfinite verb forms, for example, Turkish *John 'un Mary-ye ver-diğ-i pat-ates* (John-genitive Mary-dative give-participle-his potato) 'the potato John gave to Mary' (Keenan 1975). Here, the position relativized is the object position. Such relative clauses may be called 'participial' relative clauses. The closest English equivalents are clauses like *living in igloos* in the noun phrase *all Eskimos living in igloos*. However, in English participial relative clauses, the position relativized is restricted to the subject position, and a full finite relative clause must be used when the position relativized is the object or any other sentential function.

Complement clauses, unlike relative clauses, do not contain a position relativized. Rather, the clause represents the propositional content of a thought or utterance expressed by abstract nouns like *belief*, *statement*, *rumour*, etc. Examples are: *the belief that linguistics is easy*, *the statement that the pound would not be devalued*, *the rumour that the prime minister would resign*.

### 3. Noun-phrase Structure

#### 3.1 Configurational versus Appositional Structures

There is considerable evidence that the structure of noun phrases in English is configurational, that is, that the structure of a noun phrase like *all those five pleasant women's halls of residence which are described in the University prospectus* can be described by a hierarchical constituent structure as in Fig. 1. For

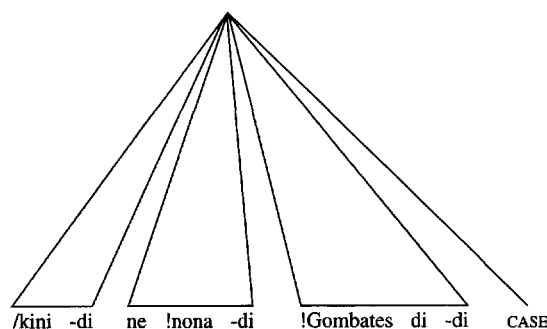


Figure 2.

example, to give just one argument for one aspect of the structure in Fig. 1, the circled node can act as the shared node in 'shared constituent coordination': *all those five—and all these three—pleasant women's halls of residence which are described in the University prospectus*.

By contrast, the structure of noun phrases in many languages can clearly be appositional, with little or no hierarchical structure. In Nama, for example, a noun phrase like [*≠kini*]-*di* [*ne !nona*]-*di* [*!Gombates di*]-*di* ([book]-third person feminine plural [these three]-third person feminine plural [*!Gombate* of]-third person feminine plural) 'these three books of *!Gombate*' can be considered as consisting of three miniature noun phrases in apposition, each marked as third person feminine plural by the postposition of *-di* and each capable of occurring in isolation. The flavor of the construction is captured by an English version like: *books, these three, the ones of !Gombate*. The whole construction, however, forms a single phrase to which a case-assigning postposition may be attached (Fig. 2).

In Nama, an alternative method of constructing noun phrases is hierarchical, and in this case the modifiers are always unmarked for person, number, and gender, and always precede rather than follow the head noun. A similar distinction between 'fractured' and 'nonfractured' phrases has been reported in the Australian language Gooniyandi (McGregor 1989). In Gooniyandi, however, the elements of a fractured phrase are each independently marked for case, and while they may form a single appositional unit, they may also be split and placed in different clause positions according to principles of informational structure.

#### 3.2 The X-bar Framework

One very influential framework for labeling the constituent structures of hierarchical noun phrases is the X-bar framework introduced by Chomsky (1970) in order to capture the kind of similarity between the structure of sentences and noun phrases which is seen most clearly in nominalization, the formation of

## Nouns and Noun Phrases

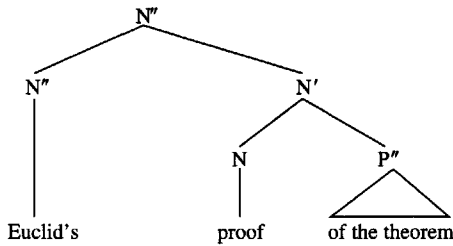
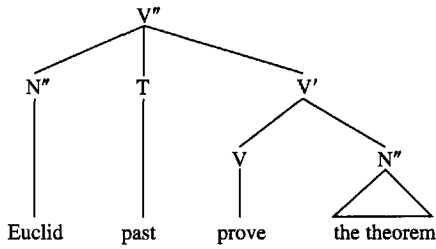


Figure 3.

nouns from verbs. According to Chomsky, the noun phrase *Euclid's proof of the theorem* is similar in structure to the sentence *Euclid proved the theorem*: like the verb *prove*, the noun *proof* takes a subject (*Euclid*) and a complement (*the theorem*), the main differences between the two structures (the introduction of the adpositions *'s* and *of*) being related to the choice of a nominal rather than a verbal head.

In one early version of the X-bar theory (see Jackendoff 1977 for discussion), the verb is taken to be the head of a sentence, and the parallel between sentence and noun phrase emerges very clearly (Fig. 3). The maximal (phrasal) level of any category is taken to be  $X''$  (where  $X$  represents any word-level

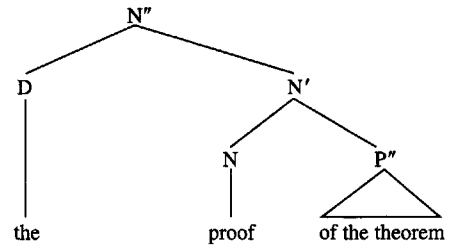


Figure 4.

category  $N$ (oun),  $V$ (erb),  $P$ (reposition), or  $A$ (djec-tive)).  $N''$  is therefore equivalent to noun phrase,  $P''$  to prepositional phrase,  $A''$  to adjectival phrase, and  $V''$  is equivalent to sentence. Complements are placed as sisters of an intermediate level node  $X'$ , and subjects (treated invariantly as  $N''$  despite the presence of the adposition *'s* in the noun phrase subject) are placed in the so-called 'specifier' position as daughters of  $N''$  or  $V''$ . The parallelism is however spoilt in this early version only by the presence of a tense node  $T$  in the sentence, and the fact that in noun phrases the specifier position may be occupied by a determiner node  $D$ , capturing the complementary distribution between *'s* genitive phrases and determiners which holds in English (Fig. 4).

In the model of the noun phrase expressed by Figs. 3 and 4, the  $N'$  node is recursive and permits the addition of any number of additional modifiers such as adjective phrases, prepositional phrases, and relative clauses. A noun phrase such as *those difficult proofs of the theorem from Euclid which are set out in our textbook* would have the structure in Fig. 5.

Structures like Fig. 5 seem fairly successful in capturing the structure of complex noun phrases.

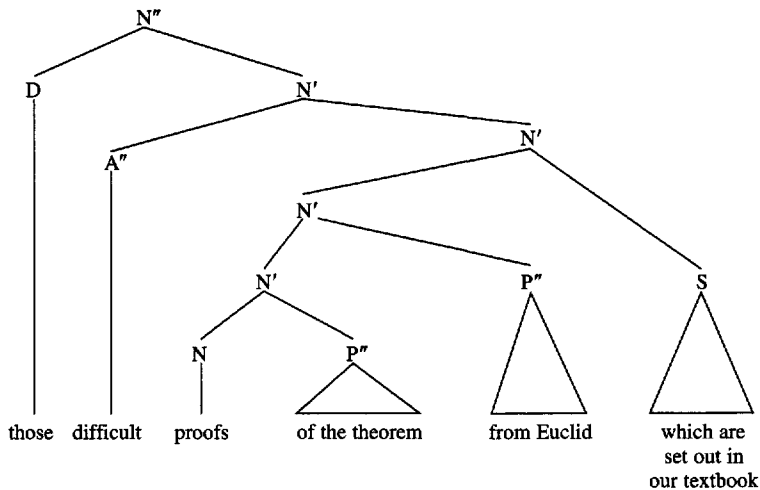


Figure 5.



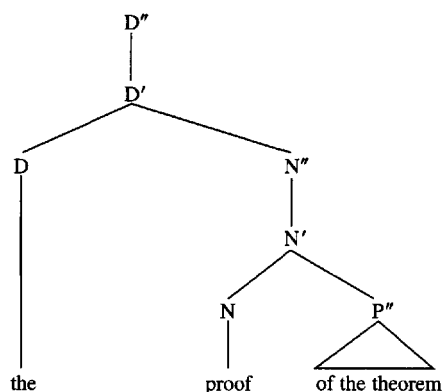
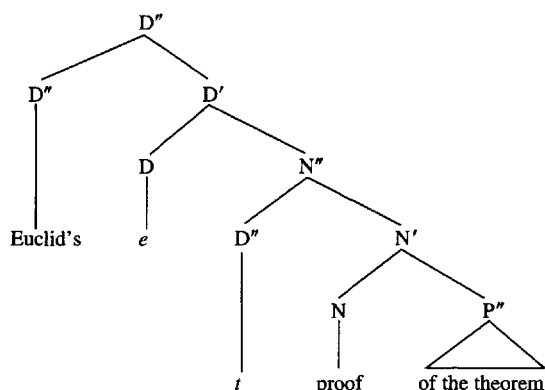


Figure 6.

However, there are some potential problems. First, there are elements which occur higher in the structure and do not seem to be well catered for: for example, the quantifiers *all*, *both*, and *half*, which in English can precede the definite determiners (*all the boxes*), and genitive phrases in languages (e.g., Finnish and Hungarian) which allow the genitive phrase to precede the determiner rather than occur in complementary distribution with it. Second, the distinction between complements and other kinds of modifier seems related to the noun's ability to assign a 'semantic' (or 'thematic') role to the complement, but it is not clear that this entails the existence of a different 'syntactic' structure for complements involving the existence of a distinct N' node (for example, the tendency of complements to occur closer to the noun than other modifiers could be explained by a principle such as the domain adjacency condition of Travis (1984), which requires elements assigned a thematic role by a head to be adjacent to that head).

These issues remain to be developed thoroughly. One possible direction in which solutions might lie is in abandoning bar structures altogether and treating all modifiers as sisters of a single recursive node with no distinctions of bar level (a move proposed in principle by, for example, Speas 1990). In the case of noun phrases, the single node would be the node N, and all modifiers, without exception, would be sisters of N.

Further independent principles would then be required to account for the possible orders in which modifiers can occur. Work on the typology of noun phrases has begun to show, however, that the relative order of some basic types of premodifiers is extremely stable across the world's languages, the order being: demonstrative—numeral—adjective—head noun (see Rijkhoff 1992). This suggests that, at least for these

Figure 7. *t* is the trace of the D'' *Euclid* after movement from specifier position in N'', and *e* is the empty D node.

categories of modifier when they precede the head, very general principles governing the relative application of modifiers are involved.

### 3.3 The DP Hypothesis

Discussions of noun-phrase structure which maintain the noun as the head of the noun phrase have been overshadowed by the DP (determiner phrase) hypothesis, which maintains that determiners are the ultimate heads (Abney 1987). A survey of the development of the DP hypothesis may be found in Ouhalla (1991: ch. 4).

A typical DP structure for the noun phrase *the proof of the theorem* is Fig. 6. Instead of being a modifier, the determiner *the* is the head of the construction, taking an N'' *proof of the theorem* as its complement. In a noun phrase like *Euclid's proof of the theorem*, the specifier positions of N'' and D' can both be exploited by assuming that *Euclid* originates in the specifier position of N'', where it can be assigned the appropriate thematic role (agent) by the noun. *Euclid* can then move to the specifier position of D', where it is assigned the genitive case (surfacing as the *'s* postposition) by the empty element D (Fig. 7).

This structure, in which the subject and object of the noun are originally both within N'' and movement of the subject from within N'' up to the specifier position of a nominal 'functional' category D, then parallels an analysis of sentences in which the subject and object of the verb are originally both within V'' and movement of the subject places the subject in the specifier position of a sentential 'functional' category I (which contains information about the tense and agreement properties of the sentence). The parallelism between noun phrase and sentence originally sought by the X-bar theory is then complete (see Fig. 8).

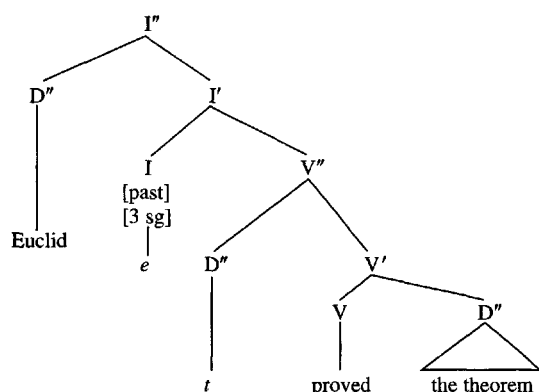


Figure 8. *t* is the trace of the D'' *Euclid* after movement from specifier position in V'', and *e* is the empty I node.

Work in the DP hypothesis has sought to refine the analysis of the functional categories in the noun phrase by including D (determiner) and AGR (agreement) as heads, paralleling the separation of I into T (tense) and AGR (agreement) in the analysis of sentences. This may account for noun phrases in which nouns have markers of agreement with their genitive phrases (e.g., Turkish *ş,u benim ş,apka-m* (this my hat-first person singular) 'this my hat.')

In addition, the node K (case) has been proposed as the highest functional head in noun phrases which are marked for case, reflecting the idea that case determines the external distribution of noun phrases. Cased noun phrases are then KP rather than DP or NP. It can be predicted that, parallel to the further refinement of functional categories within the sentence (for example, the inclusion of aspect and negation), further functional categories will emerge within the noun phrase.

While the DP hypothesis looks attractive, it too has a number of problems (see Payne 1993 for discussion). For example, an analysis of the noun phrase in which there is a skeleton of N nodes from the phrasal to the lexical level naturally accounts for the percolation along this skeleton of morphological agreement features (e.g., case, number, gender, definiteness) in languages like Russian, in which nearly all noun phrase constituents are morphologically marked. In Fig. 9, for example, the features of instrumental case and plural number percolate to every constituent of the noun phrase.

If, however, categories like case and definiteness are represented by single individual nodes K and D, and these are the highest nodes in constituency structure trees under the DP hypothesis, the natural prediction is that only the highest nodes in the tree will be morphologically marked for those categories.

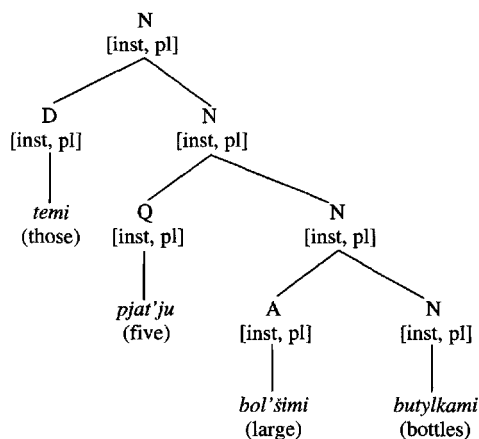


Figure 9.

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## Number and Number Systems

D. A. Cruse

The difference in meaning between *Cynthia ate the peach* and *Cynthia ate the peaches* is that a greater number of peaches is designated in the latter sentence than in the former. This difference will henceforth be referred to as a difference of 'numerosity.' All known languages have ways of expressing differences and degrees of numerosity. Some do so exclusively by lexical means. For instance, in Khmer, neither nouns nor verbs carry any grammatical information concerning numerosity: such information must be conveyed by lexical items such as *khlah* 'some,' *pui-bey* 'a few,' and so on. However, in many languages (including English) means for expressing numerosity can also be found within the grammatical system. For instance, in *These peaches are ripe*, there are three distinct grammatical signals pointing to the existence of more than one peach: *these* (as opposed to *this*), the *-es* of *peaches*, and *are* (as opposed to *is*). Where a language has grammatical resources for expressing degrees of numerosity it is said to manifest the grammatical category of *number*. In English, the grammatical system only allows a distinction between two degrees of numerosity: singular (one item) and plural (more than one item). For more subtle distinctions lexical means must be used: *a few peaches*, *several peaches*, *seventeen peaches*, and so on. Many languages have number systems which are similar to that of English; but there are also many languages whose number systems are different, in some cases very different.

### 1. Formal Aspects of Number Systems

#### 1.1 The Number and Nature of Terms in Number Systems

A grammatical system consists of a (relatively small) number of terms which are mutually excluding and whose meanings typically divide up some coherent semantic dimension. Examples of such systems in English are: tense (*Cynthia smile-s*, *Cynthia smile-d*), comparison (*tall*, *tall-er*, *tall-est*) and, of course, number. Most number systems have only two terms, singular and plural. But other degrees of numerosity occur. The most frequent of these is the 'dual,' which designates just two instances of something. An example of this is found in Iraqi Arabic: *walad* 'a boy,' *waladayn* 'two boys,' *wulid/awlād* 'more than two boys.' Less frequently encountered is a 'trial,' which is used for reference to three items; this occurs in, for instance, Marshallese and Mangarayi. Some duals (and trials) are used strictly for reference to two (or three) items; this is true of the Iraqi dual. But in other cases usage is more flexible, and the dual (or trial) can refer to a small number of items (a different range of numbers in each case, for a language that has both).

The relaxed use of dual or trial is to be distinguished from a genuine 'paucal,' whose prototypical meaning is 'a few.' (The term plural is used irrespective of whether a dual or trial is also present in the number system; that is to say, no terminological distinction is made amongst plurals which mean 'more than one,' 'more than two,' or 'more than three.' However, in languages possessing a paucal (e.g., Fijian), the number term designating many items is sometimes called a multiple.)

A satisfactory account of the number systems of some languages requires consideration of aspects of meaning other than straightforward numerosity. One such aspect is the distributive/collective distinction. Basically a distributive plural refers to a plurality of kinds or types (loosely interpreted), normally without regard to the numbers of individuals of each kind. A collective plural, on the other hand, refers to a plurality of individuals belonging to some sort of coherent set; they may, for instance, be spatially contiguous, or belong to the same owner, etc. Sierra Populuc has two plural affixes, *-āqhoh* and *-yah*, which illustrate a collective/noncollective distinction: *tāk* 'house,' *tāgāqhoh* 'many houses together, for example, a village,' *takyah* 'houses, not constituting any salient set.' A striking example of the involvement of the collective/distributive contrast in a number system is to be found in Papagó. There are three classes of noun in Papagó. One class shows a simple singular/plural opposition, with no formal distinction between collective and distributive plurals; one class has a distributive/nondistributive opposition, with no distinction between singular and collective plural; and the third class manifests the full three-way singular/collective plural/distributive plural distinction.

Slovenian and Ancient Greek show an interesting contrast in their use of duals, involving, as an additional semantic factor, whether or not the items referred to occur naturally in pairs. In Ancient Greek, the dual was used only for things like eyes, hands, feet, and so on, which naturally occur in pairs; otherwise the plural was used in references to two items. In Slovenian, however, the converse of this pattern occurs: in referring to the members of a natural pair, the plural form of the noun must be used; the dual only occurs in connexion with items that do not usually go in pairs.

Another semantic distinction, which frequently enters into the interpretation of number terms, but is less frequently marked in the number system is the 'count/mass' distinction. This can be explained using English nouns. Take the noun *water*; this is a prototypical mass noun and denotes water conceived as a substance,

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rather than as an individual item of which there might be more than one. *Chair*, on the other hand, is a prototypic count noun, and denotes a single individual of which there can in principle be multiple examples. The mass/count distinction is not morphologically marked in English, nouns referring to non-individuated masses being grammatically singular: *This water is cold*. Some languages, however, possess an individuating affix, which when added to a mass noun creates a related singular count noun. For instance, in Arabic, the noun *shajar* 'tree' is a mass noun (usually termed a collective in Arabic grammars) which denotes an undifferentiated mass of 'tree-ness.' To designate an individual tree, a suffix is added: *shajar-a*. Each of the forms *shajar* and *shajara* has its own plural: the plural of *shajar* is *ashjār*, which tends to have a distributive interpretation, that is, it denotes a plurality of tree-types; the plural of *shajara* is *shajarāt*, which denotes a plurality of tree-individuals.

If a language has a two-term number system, it is likely to signal a singular/plural contrast for count nouns, with mass nouns aligning themselves either with singular (most commonly), or plural. Less frequent two-way distinctions are collective/noncollective and (as in Papagó) distributive/nondistributive. Less frequent still is the two-way system found in inanimate nouns in Pamé. Animate nouns in Pamé display a singular/dual/plural system, but in inanimates the singular/dual contrast is neutralized, so one form indicates 'one or two' items, and the other form indicates 'more than two.' A three-term number system is likely to be singular/dual/plural, although other arrangements are possible, such as singular/collective plural/distributive plural (Papagó) and singular/collective plural/noncollective plural (Sierra Popoluca). Two types of four-term system have been reported: singular/dual/trial/plural (Marshallese) and singular/dual/paucal/multiple (Fijian).

### 1.2 The Grammatical Status of Number

Number may play no part in the grammar of a language (for example, Khmer). But even among languages in which number is integrated grammatically, considerable variation can be observed in the extent and nature of the repercussions through the grammatical system of number variation. In some languages, the expression of number distinctions has no syntactic consequences whatever; this is so, for instance, in Sierra Popoluca and Guugu-Yimidhirr. In other languages with grammatical number, number distinctions are to a greater or lesser extent implicated in the syntax. English exemplifies this, although here the syntactic repercussions are relatively modest: the form of the verb varies according to the number of the subject, but with few exceptions only in the third person of the present tense (*The girl sings*, *The girls sing*); and certain determiners have different forms according to the number of their head

noun (*this peach*, *these peaches*). Some languages display more extensive syntactic ramifications of number. French is one of these: here the number of a noun regularly affects associated articles (*le livre*, *les livres*), other determiners (*ce livre*, *ces livres*), and adjectives (*un département méridional*, *des départements méridionaux*) as well as the verb. In Iraqi Arabic, adjectives agree with their head nouns, and verbs with their subjects, in respect of number. However, duals are treated as plurals for the purposes of concord: *walad jamīl* 'a handsome boy,' *waladayn jamīlīn* 'two handsome boys,' *awlād jamīlīn* '(more than two) handsome boys.' There is a further complication: plural and dual nouns not referring to persons are treated like feminine singular nouns for the purposes of concord: *al-bayt al-jamīl* 'the beautiful house,' *al-baytayn al-jamīlā* 'the two beautiful houses,' *al-byūt al-jamīlā* 'the (more than two) beautiful houses.'

### 1.3 The Locus of Number Marking

Number is generally regarded as a category which inherently belongs to the noun, or at least the noun phrase, and if an overt marker appears in only one location, this is likely to be on the head noun of the noun phrase. The principal signal of number may, however, appear elsewhere in the noun phrase. In (spoken) French, for example, while some nouns are clearly marked for number (*cheval*, *chevaux*), the predominant locus of number information in the noun phrase is the determiner: *le livre* (/lə livr/), *les livres* (/le livr/). Some languages, for instance, Quechua and Korean, mark number only in the pronoun system. Sometimes the number marker is attached to the noun phrase as such, rather than to one determinate constituent. This is the case in Persian, where it is attached to whatever element comes in final position in the noun phrase: *ketāb* 'the book,' *ketāb-hā* 'the books,' *ketāb-e bozorg* 'the large book,' *ketāb-e-bozorg-hā* 'the large books.' It is also possible, although relatively uncommon, for the number marker to appear only on the verb. Miriam is an example of this pattern: the verb in Miriam encodes the number of its subject (a four-way singular/dual/trial/plural contrast), and its object (singular and plural only). Thus, for example, *irmile* means 'one follows one,' *irmirdare* means 'three follow one,' and *dirmiriei* means 'two follow many,' and so on.

### 1.4 The Overtiness of Number Markers

The individual terms of a number system may each have its own *mark*, or one of the terms may have no overt mark. English has an asymmetrical system in which only the plural has an overt mark. This follows what seems to be a universal pattern, namely, that if one of the terms of a number system has no overt marker, that term is invariably singular. In no language is it the case that plural is indicated by the absence of a marker and singular by means of a



singulative affix. However, this arrangement may occur sporadically. For instance, in Welsh, *plant* 'children' appears to be morphologically simpler than *plantyn* 'child.' A good example of symmetrical overt marking of singular and plural is to be found in Shona; in the following sentences, the mark of singular is the prefix *ka-* (1–3), and of plural, *tu-* (4–6) (these sentences also incidentally illustrate a high degree of number concord):

kamnan	kangu	kadiki	kari	kucema	(1)
little-child	my(sg)	little(sg)	is	crying	
'My little child is crying'					

tuvana	twangu	tudiki	turi	kucema	(2)
little-children	my(pl)	little(pl)	are	crying	
'My little children are crying'					

Symmetrical double marking of singular and plural can also be said to occur in Latin: *castrum* 'camp' (NOM SG), *castra* 'camps' (NOM PL); but here the affixes *-um* and *-a* simultaneously encode information concerning case and gender, as well as number.

### 1.5 The Optionality of Number Marking

The grammatical signaling of number may be optional or obligatory. In English, for instance, it is obligatory; it is not possible to leave the number of a noun unspecified: *the book* necessarily refers to only one book and *the books* to more than one. Even in those contexts where the number contrast is neutralized, as, for instance, in *toothbrush*, or *man-eating* (not *\*teethbrush* or *\*men-eating*), such use is obligatory—the speaker does not have the option of specifying number. There do exist languages, however, in which number marking is optional. Optionality may in theory take one of two forms: either the normal overt markers of singular and plural may be optionally omitted, or an unmarked singular form may be optionally used with plural reference. Sierra Popoluca and Mangarayi are examples of the latter type; Arawak displays a mixed regime, in that marking is obligatory in nouns referring to people, but optional otherwise. There is a probable link between optionality and involvement in syntax: number marking in a language in which number has extensive concord ramifications is unlikely to be optional.

### 1.6 Types of Number Marker

The formal means that languages use to signal number distinctions are many and varied, and several types may be found within a single language. They may be classified as follows: affixation, reduplication, cliticization, internal modification, suppletion, and the use of free markers (the so-called 'number words'). Affixes may be suffixes, prefixes, or infixes, in that order of frequency. English *book-s* and Turkish *kitap-lar* 'books' exemplify number suffixes; Shona *ka-munhu* 'person' and *tu-vanhu* 'persons' both have prefixes. In Pamé, number in inanimate nouns is signaled mostly

by prefixes (overt singular-dual, overt plural), and in animate nouns generally by suffixes (unmarked singular, overt dual, overt plural); a few nouns have both prefixes and suffixes: *ni-yáho* 'fox,' *ni-yáho-fi* 'two foxes,' *ri-yáho-t* 'more than two foxes.' Infixes appear to be rare, but occur in, for instance, Yurok: *perey* 'old woman,' *pe-ge-rey* 'old women.' Reduplication is a frequent and iconic way of indicating plurality. This may involve the whole stem, as in Indonesian: *buku* 'book,' *buku-buku* 'books,' or, more frequently, only part; the relevant part may be the beginning, as in Bontok (or Igorot): *anak* 'child,' *ananak* 'children,' or the end, as in Washoe: *gusu* 'buffalo,' *gususu* 'buffaloes.' The Persian plural marker *-hā* in *ketāb-e-bozorg-hā* 'the large books' is an example of a number clitic. Internal modification may involve only a vowel change (*goose*, *geese*), or may be more complex as in the Arabic broken plurals: *walad* 'boy,' *awlād* 'boys.' Finally, there are number words, which are free markers, syntactically distinct from numerals, and which generally constitute the only indication of number in a noun phrase. Examples of these are, first, from Gbeya:

*o tu wi-re* 'black people'  
(*o* = 'plural,' *tu* = 'black,' *wi-re* = 'person') (7)

second, from Hawaiian:

*a'u mai i'u* 'my fish(es)'  
(*a'u* = 'my,' *mai* = 'plural,' *i'a* = 'fish') (8)

### 1.7 Number Marking and Numerals

In English, the plural marker must appear even after numerals and other expressions of numerosity such as *many*, or *a few*, where it might be considered redundant in that it adds no new information. This is not the case in all languages. In Turkish, for instance, the plural marker is normally excluded in such cases: *bir inek* 'a cow,' *inekler* 'cows,' *yedi inek* 'seven cows.' The plural marker appears after a numeral in Turkish only in references to well-known collectivities like *The Seven Dwarfs* (*Yedi Cüceler*), and *The Forty Thieves* (*Kırk Hırsızlar*). Duals do not always behave in the same way as their corresponding plurals. The dual forms of Slovenian nouns cooccur with the numeral 'two,' just as plural forms cooccur with numerals higher than two. But in Iraqi Arabic, the numeral *ithnayn* 'two' is excluded before duals, although higher numerals take a plural noun.

### 1.8 Oddities of Number

English has some words with idiosyncratic number properties. Consider, for example, *scissors*, *oats*, and *cattle*. The first two are plural in form, but neither, at least in everyday nonspecialist speech has a corresponding singular form. *Scissors* is a singular count noun as far as its meaning is concerned, but grammatically it is plural: *Those scissors are blunt*; *oats* is semantically a mass noun, but grammatically is something of a hybrid: for example, *These oats are not*

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suitable for muesli, but *How much oats have you got in that sack?* referring to a quantity of oats. *Cattle* is singular in form but plural in meaning and in grammar: *Those cattle are healthy*; there is no corresponding singular form. Neither *cattle* nor *scissors* can be directly counted; both require something like a classifier: *twenty head of cattle*, *three pairs of scissors*. Nouns like *scissors*, *trousers*, and *alms*, which occur only in the plural, are sometimes known as 'pluralia tantum.'

## 2. Semantic and Pragmatic Aspects of Number

### 2.1 Referential Correlates of the Mass/Count Distinction

A count noun in one language may well have an equivalent in another language which is a mass noun. For instance, *spaghetti* is a singular mass noun in English, but plural in Italian and French, (*The spaghetti is ready*, *Les spaghetti sont prêts*); *fruit* is basically a mass noun in English (*Have some fruit*), but a count noun in French (*Prenez des fruits*); *vegetable*, *pea*, and *bean*, on the other hand, are count nouns in English, but their Turkish equivalents (*sebze*, *bezelye*, and *fasulye*) are mass nouns. However, the picture is not one of total chaos: there is a rough correlation in English between the size of individual units of something and whether the corresponding noun is count or mass (*fruit* is an exception here). Consider the following sets, ordered more or less according to size, and note where the transition from count noun to mass noun occurs:

a lot of	beans, raisins, lentils ...	rice, sugar, salt (9)
	chips, shavings, filings ...	powder, dust
	rocks, stones, pebbles ...	gravel, grit, sand

### 2.2 Notional Number Agreement

Examples can be found in English where a plural noun subject occurs with the singular form of the verb, and vice versa. In such cases, the verb appears to respond not to the grammatical properties of the subject, but to the way its referent is thought of; hence, this phenomenon is often referred to as 'notional number agreement.' Consider, first, instances of singular subject and plural verb, which usually involve nouns denoting groups of people: *The government have decided to act*, *The team are well-prepared*. Notice that plural concord within the noun phrase is ungrammatical: *\*These team are well-trained*. Anything in the noun phrase that emphasizes singularity renders collocation with a plural verb somewhat uneasy: *?This team are well-trained*, *?One team are well-trained*, *the other one aren't* (however, the greater the distance between the verb and the marker of singularity, the more acceptable the result: *That team we played last week were well-trained*). Semantically, a singular verb highlights the unity of the designated group, while a plural verb emphasizes its multiple character. Predicates which hold of each member of a group separately tend to prefer plural concord: *The*

*school choir brush their teeth*/ *\*brushes its teeth before a concert*. Predicates which hold of the group as a whole, but not of individual members, demand singular concord: *The school orchestra has/\*have twenty-eight members*. It is sometimes said that nouns denoting nonhuman, or inanimate groups do not behave in this way. This is certainly true in many cases: *\*His extensive library were damaged in the fire*, *\*The forest were blown down in the gale*. But it is not universally true: *The Vollard Suite* [*a set of etchings by Picasso*] *were sold separately*, *All John's herd are branded with his initials*. A plural subject may also have a singular verb; the semantic effect of this is a focus on a determinate quantity as a single entity: *Five sausages is too much for me*, *Twenty pounds is a lot to pay*.

### 2.3 Recategorization of Mass and Count Nouns

Many nouns in English can be used both as count nouns and as mass nouns: *How many apples have you had?*, *How much apple have you had?*, *How many beers have you had?*, *How much beer have you had?* Frequently one usage is intuitively felt to be more basic than the other: in the above cases, *apple* is basically a count noun and *beer* a mass noun. Looking first at mass nouns used as count nouns, two interpretations can be distinguished. First, what is counted may be kinds, although within each kind the 'mass' conception remains intact: *We had three wines at dinner*. Second, the mass may be parceled out in standard quantities: *I only had three beers*. Predicting which nouns will allow recategorization and what the most likely interpretation will be is no easy matter. For instance, bread comes in standard units (loaves), but *\*two breads* cannot refer to two loaves (but cf. French *deux pains*, which can); there are numerous varieties of ice-cream, but *two ice-creams* is much more likely to be two scoops or helpings; blades of grass might be thought of as units of grass, but *two grasses* can only be two species. The reverse recategorization, using count nouns as mass nouns, is common when referring to, for example, a fruit whose individuality has been destroyed by cooking or chopping up: *Have some apple* (likely to be cooked), *There's too much apple in the fruit salad* (likely to be chopped up). A more radical recategorization is observable in *With a Lada you get a lot of car for your money*.

### 2.4 Alternative Plural Forms

A number of nouns in English have plurals which are identical in form to the singular: *sheep*, *deer*, *fish*, *trout*, *salmon*, *grouse*, etc. Some of these can occasionally be found with an alternative, regularly formed plural, which, like the plural of many mass nouns, is distributive in meaning, and refers to a plurality of species: *The trouts and salmons of the world*, *The cat-fishes of North America*, *The deers of south-west Asia*. (These forms are not obligatory with this meaning, but when they occur, a distributive interpretation seems

unavoidable.) A similar alternation, but with the regularly formed plural being the more frequent, occurs with certain animals and plants: *We spotted three elephants/elephant today. The south side of the hill is covered with pines/pine.* The *s*-less plural seems to be characteristic of what might be loosely described as 'specialist talk'—hunters, botanists, zoologists, and the like. The term 'semi-mass noun' has been suggested to describe forms like *elephant in three elephant*. There is certainly a reduction of individuality in such usage (as, perhaps, there is in *a lot of fish* compared with *a lot of fishes*), but it is important to emphasize that these are genuine plurals: *Those/\*that three elephant you spotted yesterday have/\*has rejoined their/\*its herd.*

### 2.5 Nonnumeric Uses of Number Terms

Finally in this survey of number and number systems it is worth noting that number terms may have uses which are unrelated, or are only indirectly related, to

numerosity. The use of the plural pronouns *vous* and *Sie* in French and German to indicate politeness, respect, or formality, is well-known. Two other non-numeric uses of the plural can be illustrated from Turkish. The first is to convey vagueness: *burada* (lit. 'in this place') 'here,' *buralarda* (lit. 'in these places') 'hereabouts' (perhaps there is a similar use in English here). The second use is to indicate intensification: *uzakta* 'in the distance,' *uzaklarda* 'in the far distance'; *kapı yıkılıyordu* (lit. 'the door was being knocked down') 'there was a heavy knocking at the door,' *kapılar yıkılıyordu* (lit. 'the doors were being knocked down') 'there was a tremendous knocking at the door.'

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## Particles

D. Hartmann

### 1. The Term 'Particle'

The term 'particle' (Latin *particula* 'small part': German *Partikel*, also *Funktionswort*, *Formwort*, *Füllwort*; English *particle*, also *function word*, *structural word*; French *particule*, also *invariable*) denotes elements of uninflecting word classes frequently found in languages such as Classical Greek, German, Dutch, Norwegian, etc. Adverbs, conjunctions, prepositions, along with modal, focus, and other particles all belong to the class of invariables in German (Altmann 1976: 3; Heidolph *et al.* ii 1981). In addition, sets of invariable elements are included such as sentence equivalents (interjections, etc.) and discourse markers; these provide discourse structural functions for the extension of discourse and for confirming (see below, Sect. 6).

In spite of the upswing in particle research that has taken place in Germany during the 1970s and 1980s, there remain a number of unresolved problems. The absence of a universally recognized classification of uninflected words, as well as of a clear demarcation from other word classes, such as adverbs, together with terminological inconsistency, especially with regard to the term 'particle' itself, are a few examples of the difficulties confronting researchers. To these open questions belongs the additional problem of whether there is an 'overall meaning' (German *Gesamtbedeutung*) of particles, considering the fact that particles in

discourse may have very different meanings and shades of meaning.

In late twentieth-century particle research, one finds at least three notions of 'particle':

- (a) A very wide-reaching term designates all uninflected elements as particles. Word classes such as the German focus particles *allein* and *nur* in *Allein Hans hat Maria nicht gesehen. Nur Martin war nicht betrunken* ('Only Hans has not seen Mary. Only Martin was not drunk') are here placed on an equal footing with prepositions, adverbs, conjunctions, and other particle classes (Altmann 1976: 3; Hentschel and Weydt 1990: 2487ff.; Thurmair 1989; *Duden—Grammatik* 1995: 369–75.).
- (b) In a narrow sense, particles are understood as comprising all invariable elements which are not prepositions, conjunctions, or adverbs (Heidolph *et al.* ii 1981: 683; similarly Helbig and Kötz 1981: 491; Helbig and Buscha 1988). In other words, particles are, among other things, modal and focus particles.
- (c) Another suggestion is to consider particles as subsets of invariables such as adverbs, conjunctions, and prepositions. This concept was developed following criticism of the definitions in (a) and (b); it arose when invariables began to be

placed in a comprehensive theoretical framework (Eisenberg 1994: 208; see also Zwicky 1985).

The following discussion of the grammatical characteristics of particles, and of the semantic and pragmatic problems connected with them, will be based on a narrowly defined term of particles as in (b) above; this excludes adverbs, prepositions, conjunctions, negative words, and interjections. In order to emphasize clearly the unusual qualities of particles, they will be compared with other uninflected elements, in particular adverbs. (The discussion is based on German material; other languages such as English will be drawn upon from time to time. The translation of the German examples is literal rather than literary; see also *Adverbs and Adverbials; Prepositions and Prepositional Phrases; Topic and Comment.*)

## 2. Particles: Their Delimitation from Other Invariables, Especially Adverbs

Adverbs are invariable terms which usually serve to express the spatial, temporal, and modal situation of objects and facts. In German, the category 'adverb' contains, for example, spatial, temporal, modal, and gradual subclasses such as:

*hier, dort, rechts, oben, vorn* (spatial) (1a)  
'here,' 'there,' 'right,' 'above,' 'in front of'

*bald, eben, jetzt, gestern* (temporal) (1b)  
'soon,' 'just (now),' 'now,' 'yesterday'

*gern vielleicht, wahrscheinlich, unglücklicherweise* (modal) (1c)  
'gladly,' 'perhaps,' 'probably,' 'unfortunately'

*sehr, ganz, etwas, weitaus, fast* (gradual) (1d)  
'very,' 'quite,' 'some,' 'by far,' 'almost'

Like nouns, verbs, and adjectives, adverbs are open classes, whereas particles form a closed class. Adverbs have lexical meaning and belong together with nouns, verbs, and adjectives among the main lexical categories. In contrast to particles, prepositions, and conjunctions, adverbs are not function words. One should distinguish between the terms 'adverb' and 'adverbial'. Generally, 'adverb' is understood as a categorial term and 'adverbial' as a relational one. An 'adverb' indicates a part of speech; an 'adverbial' a syntactic relation. Eisenberg (1994: 204) points out that the term 'adverb' (*das Adverb*) in German can refer not only to a certain category (as the terminology suggests), but also to words from very different constituent categories.

*Hans arbeitet hier.* (2a)  
'Hans works here.'

*Hans wohnt hier.* (2b)  
'Hans lives here.'

*Der Mann hier.* (2c)  
'The man here.'

*Das hier beschädigte Buch.* (2d)  
'The here damaged book.'

In (2a), *hier* refers to the entire sentence, i.e., the circumstances explicated by the sentence are spatially determined by the adverb. In (2b), *hier* is a complement to *wohnt*, and thus refers to the verb. In (2c), the adverb refers to the noun *Mann*, and in (2d) to the adjective *beschädigte*. Therefore, adverbs can be characterized as uninflected words with lexical meanings referring to adverbs, nouns, adjectives, or sentences according to their position within the sentence. This kind of flexible characterization is not available for modal particles nor for many discourse markers. Compared with modal particles, focus particles are more flexible in regard to syntactic and semantic properties.

But there is another way of differentiating between particles and adverbs. Adverbs (just like most other uninflecting word classes) form a category which contains only expressions belonging to this specific category. Precisely this property does not hold for most of the particles, especially not for modal particles. In most cases, particles have multiple memberships of several word classes. Multiple membership could thus be a property of particles only, alone among word classes. This unique position of the particles leads researchers such as Eisenberg to understand particles as a subset of adverbs, in the sense of notion (c) above.

The use of German *eben* in different ways may illustrate the proximity of particles to sentence adverbs as well as their distance from adverbs. Unlike particles, many adverbs in German are able to fill different positions without changing the meaning, as in (3a-d):

*Hans verließ eben das Zimmer* (3a)

*Hans verließ das Zimmer eben.* (3b)

*Eben verließ Hans das Zimmer.* (3c)

*Das Zimmer verließ Hans eben.* (3d)  
'Hans has just left the room.'

In contrast to *eben* as modal particle, *eben* as adverb can occupy four positions in a simple SVO (subject-verb-object) sentence (see *Mood and Modality: Basic Principles and Mood and Modality: Further Development*). Since *eben* is a sentential adverb, the examples in (3) have one and the same meaning, namely that of fixing the context's time coordinates. 'Hans left the room shortly before the sentence was uttered'.

In (4), *eben* is used as a modal particle:

*Männer sind eben so.* (Trömel-Plötz 1979) (4)  
'Men are like that.'

The use of *eben* as modal particle in (4) indicates the following: S claims and emphasizes, in an apodictic way, that the facts referred to are true; that S has always known this and that S considers this as obvious (Hartmann 1977; Thurmair 1989: 120). While as



a modal particle, *eben* has a variety of occurrence restrictions with regard to sentence mood and sentence position in contrast to adverbs, *eben* used as an adverb may have different syntactic positions in German, as in (3).

Apprehending and formulating the meaning of particles is often much more difficult than describing the meaning of adverbs; it is hard to find an appropriate metalanguage. In spite of the enormous number of works on particles, the meaning of the individual particles is not clear, but rather in dispute. This state of affairs is caused by the recalcitrant nature of the meanings, especially of modal particles. Particles are often highly abstract, versatile, and context-dependent in their interpretation (König and Requardt 1991: 64). Hence, it may be extremely difficult for learners of languages such as German to recognize the various functions these expressions can have in discourse.

### 3. Focus Particles

Focus particles (also called 'scalar particles'; German *Gradpartikel*) are expressions such as German *allein* (only, merely), *auch* (also, even), *also* (so), *eben* (even, also), *einzig* (only), *erst* (only, just, but), *gerade* (just), *nur* (only), *selbst* (even), *sogar* (even) in certain usages. In German, these expressions can be used partly as conjunctions or adjectives, partly (under other usage conditions) as modal particles. They have syntactic and semantic polyfunctionality. The focus particle is usually placed in front of the constituent that it refers to syntactically. In addition to the sentence, other constituents can determine the reference (also called 'scope'). Focus particles share these characteristics with adverbs, but the same characteristics also serve to differentiate focus particles from modal particles. Examples such as (5) will elucidate the semantic functions of focus particles:

*Wir haben die Suppe gegessen.* (5a)  
'We have eaten the soup.'

*Sogar wir haben die Suppe gegessen.* (5b)  
'Even we have eaten the soup.'

*Wir haben sogar die Suppe gegessen.* (5c)  
'We have eaten even the soup.'

*Wir haben die Suppe sogar gegessen.* (5d)  
'We have even eaten the soup.'

The role of focus particles is seen from the fact that in a scalar interpretation, they assign the size of the named constituents a certain place or degree on a fixed scale. *Sogar wir* in (5b) means that we and, besides us, others have eaten the soup.

These others are situated 'among us' on an imaginary scale, on which the elements are placed according to their ability or possibility of eating the soup.

(Eisenberg 1994: 207 (this author's trans.))

The group identified as *wir* occupies an extreme value on this scale. The *sogar* sentence implies validity for 'lower' values on the scale, namely a reference to the others who also have eaten the soup. In (5b), moreover, it is conceivable that there is someone other than ourselves who did not eat the soup. In (5c) and (5d), the expressions with *sogar* are interpreted in a similar way.

Consider now the following examples:

*Tim spricht Chinesisch.* (6a)  
'Tim speaks Chinese.'

*Nur Tim spricht Chinesisch.* (6b)  
'Only Tim speaks Chinese.'

*Tim spricht nur Chinesisch.* (with contrastive stress) (6c)  
'Tim speaks only Chinese.'

*Tim spricht nur Chinesisch.* (with contrastive stress) (6d)  
'Tim only speaks Chinese.'

Certain focus particles are not only used in a scalar, but also in a nonscalar function, and sometimes in both. A nonscalar interpretation of a focus particle phrase exists, when only a subset of the group targeted by the scope-phrase is identified as a complete set, such as by the *nur*-phrase above. *Nur Tim* in (6b) points out that Tim speaks Chinese, and that it is not the case that any one else in the group under consideration can speak that language. In addition, the fact that Tim and nobody else speaks Chinese runs contrary to our expectations.

A more general version of the semantic analysis of *nur* in its nonscalar interpretation would be: the proposition *p* (without the focus particle) is valid as presupposed. The assertion of the focus particle phrase means that no other scope-formulation than the one resulting from the particle sentence produces an appropriate remark, related to the sentence context. Or: only *p* = *p*, and not *not p* (Altmann 1976: 311). An analysis of propositions containing the English *also*, into a focused and nonfocused (background) part has been suggested for the nonscalar interpretation of sentences with focus particles (see Jacobs 1983; König 1981, 1989). Accordingly, every sentence which contains a particle is assigned a set of propositions or alternatives, related to the constituents focused upon. Focus particles can either include or exclude alternatives to their focus. 'Additive particles like *also*, *too*, *even*, etc. include such alternatives, restrictive particles like *only*, *merely*, etc. exclude members of the presuppositional set under consideration. Furthermore, focus particles may order the members of the set of alternatives under consideration on a scale ...' (König 1989: 321; for a careful syntactic and semantic analysis of focus particles in German see Jacobs 1983. For English, see Horn 1969; Fraser 1971).

### 4. Modal Particles

In late twentieth-century descriptions of German, 20 or so expressions are assigned to the class of modal

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particles (German *Modalpartikel*, *Abtönungspartikel*): *aber, auch, bloß, denn, doch, eigentlich, eben, etwa, einfach, erst, halt, ja, nun, mal, nur, schon, vielleicht, ruhig, wohl*. Most of the words listed are not only used as modal particles, but also (in other contexts) as adverbs and adjectives (*etwa, doch, vielleicht, einfach, ruhig, mal, nunmal, halt, eben*), as focus particles (*erst, auch, schon, nur, bloß*), conjunctions (*aber, denn*), and as sentence equivalents (*ja*). 'Such overlap is to be expected if modal particles are the endpoint of a process of grammaticalization that is fed by several classes of function words' (König and Requardt 1991: 63).

*Paris liegt an der Seine, aber Marseille liegt am Mittelmeer.* (7a)

'Paris lies on the Seine, but Marseille lies on the Mediterranean.'

*Hans reiste nach Rom, doch Luise fuhr an die Nordsee.* (7b)

'Hans traveled to Rome, but Luise went to the North Sea.'

*Du kannst aber viel essen!* (7c)

'You can sure eat a lot!'

*Hans ist doch nicht gescheit.* (7d)

*Er hat wieder zu trinken angefangen.*

'Hans is not too bright. He has begun to drink again.'

In (7a) and (7b), *aber* and *doch* are used as conjunctions; in (7c) and (7d), on the other hand, as modal particles.

*Eben habe ich die Brille noch in der Hand gehabt, doch jetzt finde ich sie nicht mehr.* (8a)

'I just now had the glasses in my hands; but now I cannot find them any more.'

*Hans ist seit fünf Uhr auf den Beinen.* (8b)

*Er ist eben ein Frühaufsteher.*

'Hans has been on his feet since five o'clock. He is just an early bird.'

*In Norddeutschland ist es eben.* (8c)

'(In) North Germany (it) is flat.'

In (8a), *eben* is a temporal adverb, in (8b) a modal particle, and in (8c) it can be understood as either a modal particle (with a contrastive accent on the noun *Norddeutschland*) or as a predicative adjective (when the noun is not stressed) (see *Adjectives*). Modal particles are always unstressed; as constituents, they refer to the entire sentence (see *Constituent Structure*). They cannot be used as either parts of a sentence or as elements of sentence parts. They do not occur in the forefield of the sentence, but in the so-called 'middle field,' that is, in the position between the finite verb and the nonfinite verb-forms; they partition the sentence into a thematic and a rhematic part (see *Topic and Comment*). Modal particles have a specific distribution dependent upon the sentence mood (Hartmann 1979; Thurmair 1989). Thus, *auch, denn, eigentlich*, and *etwa* only appear in questions (König 1977), while particles like *ja* are

restricted to declarative sentences (Hartmann 1979). Words that are only modal particles do not exist in German. The polyfunctionality of the particle expressions named above has sometimes led to the rejection of a subclass 'modal particles' among the invariables, so that these expressions came to be assigned to adverbs or conjunctions (Eisenberg 1994) (see *Mood and Modality: Basic Principles; Mood and Modality: Further Developments; Modality*). What is the semantic and communicative achievement of modal particles? Unlike adverbs, they have no lexical meaning; unlike focus particles, they contribute nothing to the propositional meaning of a sentence (in the terminology of speech act theory). In general, modal particles have the function of fitting the content of a sentence to the context of speech (Thurmair 1989; Hentschel and Weydt 1990: 283; Helbig and Buscha 1988; Eisenberg 1994). Thus, *aber* in (7c) shows that the speaker (S) is surprised or astonished at the degree of the hearer's (H) appetite. But, this means stating that H's appetite is not in agreement with S's former assumptions and expectations about H. So, the sentence containing *aber* shows an inconsistency between old and new assumptions. *Eben* in (8b) indicates that the speaker has always known that Hans is an 'early bird.' Modal particles give a statement a specific shade, and also express relations between utterances, the information contained in them, and previously available knowledge (previous statements, old assumptions, collective knowledge).

*Kein Wunder, daß der Unsinn redet. Der hat ja schon eine halbe Whisky-Flasche geleert.* (9)

'No wonder that he talks nonsense. He has already had half a bottle of whisky.'

*Ich kann rechtlich nichts gegen diesen Beschäft unternehmen: ich hab ja keine Beweise.* (10)

'I can't legally do anything against this dirty swindle; I don't have any evidence.'

The statements containing the particles *ja* in (9) and (10) give the reasons for the remarks in each of the previous statements. Modal particles such as *ja* and *doch* often appear in everyday argumentative, oral texts. The speaker signals that she or he is already aware of the information given, using the modal particle *ja*. The factors of knowledge and of the connective strength of certain modal particles have been taken into consideration in various methodological approaches dependent on whether the starting point for semantic analysis is the sentence or the context. According to Doherty's (1985) semantic analysis of simple sentences containing modal particles, at least one certain group of modal particles expresses epistemic meaning, i.e., various attitudes to the existence or nonexistence of the facts. Furthermore, all modal particles establish the speaker's relation to the epistemic attitude and at the same time establish a relationship to a different attitude toward the facts. A

sentence such as *Konrad ist ja verreist* 'Konrad has gone on a trip' has the following interpretation: ASS ( $\text{pos}_s(p)$ ) and IM ( $\text{pos}_x(p)$ ). The notation specifies an assertive attitude mood (ASS) because of the declarative sentence. The affirmative sentence form allows us to determine a positive attitude ( $\text{pos}$ ) regarding  $p$  of an identifiable speaker  $S$ . At the same time, *ja* expresses a positive attitude of an unidentified speaker  $x$  toward  $p$ ; the person with this attitude may be identified from the context. Furthermore, *ja* as modal particle implies that it is possible for the hearer to know what the speaker is claiming (IM).

After a long time of solely descriptive work on modal particles, Doherty's study can be considered as one of the first consistent and formal analyses of the relations between meanings of modal particles and other aspects of sentence meaning. But it is doubtful whether an analysis of modal particles is useful without taking into account the context beyond the sentence. Franck (1980) had already stressed the structural role of modal particles in discourse within the framework of discourse analysis. König and Requardt (1991) show, within the framework of a relevance-theoretic approach, how a context-oriented analysis meets the postulate of only one basic meaning of a specific modal particle. Following Blakemore's (1987) theory of communication, they start from the assumption that modal particles are to be analyzed as instructions to process the utterance in certain types of context. New information is always understood in the context of already existing assumptions. Contextual assumptions are to be combined with the context of a new utterance, that is, with new information. This is done by means of inference processes, where old and new information is brought together to serve as premises in an argument that leads to new assumptions. Modal particles support the problems to be solved by the speaker functioning as an 'inference system.' Some modal particles can be used to identify inconsistencies between utterances or propositions (*doch, etwa*); other expressions can be used in order to indicate the degree of strength (evidence, confidence, insistence), with which a statement is made or a directive is uttered (*aber, vielleicht, erst, schon, ja, wohl, eben, nunmal, halt*).

Finally, a third group of modal particles determines the context in which a new utterance is to be processed. For instance, *ja* and *eben* indicate a relatively high degree of emphasis, expressing reference to obvious evidence. In (11a), *ja* as a modal particle is to be analyzed as a signal of evidence referring to background assumptions, whereas the evidence in (11b) is a result of direct perception (examples from König and Requardt 1991):

*Dein Mantel ist ja ganz schmutzig.* (11a)  
'(Hey) your coat is all dirty.'

*Fritz hat ja noch gar nicht bezahlt.* (11b)  
'(Hey) Fritz has not paid yet.'

Modal particles have effects not only at sentence level, but also in discourse. In Quasthoff's (1978) treatment of the connection between everyday argumentation (which is understood to be a particular scheme of action) and stereotypes (which express prejudices), on the one hand, and the use of the modal particles *ja, doch, eben*, on the other, stereotypes are components of collective knowledge, just like the norms which underlie the argumentative components 'datum,' 'warrant,' and 'backing.' Accordingly, stereotypes are seldom used for 'claim.' In this way, the modal particles mark the argumentative components as elements of collective knowledge, and stress the latter's supportive role within the argumentation.

The linguistic equivalents of modal particles in other languages, too, are beginning to be studied. English has only a few lexical equivalents, and hence prefers other language means such as intonation, stress, auxiliary verbs, question tags, interjections, and speech formulae (see Bublitz 1978; Nehls 1989; for Swedish, see Stolt 1979). There are lexical counterparts in Finnish (Kärna 1983). Information about other contrastive studies can be found in Weydt and Ehlers (1987: 244) (see *Auxiliaries; Interjections*).

## 5. Sentence Equivalents (Answer Particles, Interjections, etc.)

Words that are not part of a sentence, but nevertheless are understood to have sentence value are called 'sentence equivalents' (Helbig and Buscha 1988; Engel 1988). They are not integrated into the sentence syntactically and often function as complete turns in discourse; they are generally placed at the front of a sentence, for example: *ja, nein, bitte, ah, and hm* (yes, no, please, uh, uhm). There is no uniform, universally agreed upon treatment concerning their extent and delimitation from other classes of invariables (see Helbig and Buscha 1988; Engel 1988). A common classification of sentence equivalents is as follows: answer particles (German *Antwortpartikeln*: e.g., *ja* (yes) and *nein* (no) as answers to questions), interjections such as German *pfui* and *aua* as expressions of feelings (disgust and pain), reactive particles (German *reaktive Partikeln*) as reactions to certain speech act types or as speech act indicators or illocutionary indicators such as German *danke* and *bitte* ('thank you,' 'please') (see Engel 1988). Grammarians tend to interpret these particles, just like the other ones, as monofunctional. They characterize them semantically and present them in lists. Discourse analysis studies, however, point to the polyfunctionality of sentence equivalent particles and to their structural function in discourse (as signals for turn-taking, as markers for openings, closings of topics, or of side sequences) (Quasthoff 1979). From a discourse functional point

of view, the favored means of classification of sentence equivalents is to integrate them into the class of discourse markers.

## 6. Discourse Markers

Discourse markers (German *Gliederungspartikeln*, *Sprecher-*, *Hörersignale*, *gefüllte Pausen*, *Gesprächswörter*), just like tag questions or back channel signals or sentence equivalents, are not integrated into the sentence. Words such as German *ja*, *hm*, *nich*, *ne* (tag questions), *naja* ('anyway'), and others are considered as discourse markers. They occur exclusively in spoken language (standard, vernaculars, dialects). Since they only occur in oral form, most of them have not been included in the usual descriptive frameworks, which are oriented toward written language. There is no agreement on how to separate discourse markers from other classes of invariables. Discourse markers belong to the most ambiguous oral expressions. They can be understood as a subclass of discourse signals; just like discourse signals, they have discourse-organizing and discourse-interactive functions, i.e., listener- and speaker-steering functions. If one perceives oral discourse as the realization of interactive patterns, then the structure of oral discourse is understood to be the structure of a communicative behavior, where the term 'structure' refers to a contextual process. Text production and text reception are considered to be dynamic processes whose analysis demands the modeling of cognitive, text referential, and interactive events. Discourse markers such as *ne*, *nich*, *gell*, and *woll* (English equivalent: 'tags' in tag questions) are used in discourse units and other conversational sequences as connecting signals that depend upon the speaker's dialect and personal characteristics. These connecting signals, together with such linguistic means as *und da*, *da*, and *dann* (English 'and then,' 'then,' 'so') mark the textualization of oral speech ordered paratactically in order to reflect the cognitive structure. Particles such as *naja* ('anyway') and *also* ('well') serve as indicators for narratives, while sentential discourse markers often indicate breaks in the discourse pattern, topic completions, or turn changes. Modal particles such as *ja*, *halt*, and *eben*, which do not have lexical English equivalents, do not function as discourse markers themselves, but can emphasize the signal character of other structuring devices. Beyond their text structuring function, back channels such as *ja*, *na ja*, *tja*, and *äh* in German can serve to indicate a claim to the floor (so-called 'turn initiating devices'). In contrast, tags like *ne*, *gell*, *ja*, *hm*, and *oder* can often be seen as turn exit devices. *Ja* and *hm* uttered by the listener serve merely as backchannel particles (Willkopp 1988).

In all cases, the interpretation of a signal depends on the context of the previous turn(s), on the positional, intonational, and finally suprasegmental characteristics (e.g., the positioning of pauses, pitch). For the role

of pitch for the analysis of *hm* as a listener signal, see Ehlich (1979) and Quasthoff (1981).

## 7. Research Perspectives

The history of particle research allows one to clearly recognize the typical phases in the opening up of a new research field. These phases stretch from the unsystematic analysis of individual examples (see Weydt 1979 for modal particles) to the formal linguistic description of the semantics of particle sentences (see Jacobs 1983 for focus particles), and functional analyses within the framework of discourse analysis.

Particles have attracted the semanticist's attention because they appeared suitable vehicles for calling previously established theories of meaning into question. Their very faint distinctive shades of lexical meaning present a challenge for their semantic description, requiring methodological innovation and precision. Among the analyses of individual sets of German particles, those of focus particles have been the most accurate: these particles have been described from a formal-linguistic point of view, too (for syntax, see Altmann 1976; for semantics, Jacobs 1983; König 1989). However, the most extensive body of literature available is that treating modal particles (see the bibliography in Weydt and Ehlers 1987). A standardized explication of the meaning of modal particles had not yet been achieved as the 1990s began (see Thurmair 1989). For this reason, an application of the German results to other languages (including non-Indo-European ones) is only possible in a very limited way, and a contrastive description of particle use for Indo-European and non-Indo-European languages is still lacking. Before one can examine the validity of research results cross-linguistically, a classification of the invariables with respect to uninflecting languages must be made, and a standardized terminology for particles determined.

*See also:* Constituent Structure; Mood and Modality: Basic Principles; Mood and Modality: Further Developments

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## Parts of Speech

R. L. Trask

### 1. Introduction

Every language has thousands of lexical items. If every one of those lexical items behaved grammatically in its own unique way, there would be no syntactic generalizations to be made, and the study of syntax would be an unrewarding discipline, consisting merely of the endless tabulation of miscellaneous observations. Fortunately, things are not like that. In every language, the lexical items fall naturally into a small set of categories, such that the words in any category exhibit similar behaviour, while words in different categories exhibit different behaviour.

The existence of such categories has been recognized in Europe for over 2000 years. Various names have been conferred upon these categories: the most venerable is *parts of speech*, while recent linguists have called them *word classes* or *lexical categories*. However, the particular set of categories which needs to be recognized in any given language is not so obvious as to be beyond debate. The linguists of the past struggled to identify criteria for setting up parts of speech, and they recognized fewer word classes than we do today. Even now, linguists continue to disagree on several points. Nevertheless, a great deal of progress has been achieved, and today's debates about the parts of speech to be recognized in, say, English, are now mostly confined to a couple of vexed points—though see below for some strongly dissenting views. One thing that has been established is that not all languages have the same parts of speech. Some have more; some have fewer; and there has been a debate over the question of whether any parts of speech are universally present. To this question I will return below.

### 2. The Pre-modern Era

In Europe, the Greeks were the first to attempt part-of-speech classifications. Plato began the tradition by dividing the sentence into *onoma* and *rhema*, terms which have been variously translated as 'subject' and 'predicate' or 'noun' and 'verb'. It is not clear whether Plato was talking about words or phrases, but, in any case, his pupil Aristotle added a third category, the *syndesmoi*, or grammatical words.

Aristotle was followed by the Stoics, whose works have not survived, and have had to be reconstructed from later commentaries. The Stoics made further distinctions, dividing the *onoma* class into common nouns, proper nouns and adverbs, and the *syndesmoi* class into inflected forms (pronouns and articles) and uninflected forms (prepositions and conjunctions). The presence or absence of case-marking was their primary criterion, and hence adjectives were classed together with nouns.

The Stoics were followed by the Alexandrians, who took advantage of Stoic work now lost to us but introduced innovations of their own. The most influential of the Alexandrians was Dionysius Thrax, whose *Tekhnē grammatikē*, around 100 BC, established a long European tradition by recognizing eight parts of speech. In modern terms, these were as follows: nouns (including adjectives), verbs, participles, articles, pronouns, prepositions, adverbs, and conjunctions. To modern eyes, the curiosities here are the inclusion of adjectives ('nouns adjective') with nouns ('nouns substantive') in a single category, and the recognition of participles as a separate part of speech, resulting from the observation that Greek participles shared the inflections of both nouns and verbs. As a point of interest, it may be noted that Thrax included interjections among the adverbs, thereby establishing a long-standing tradition that troublesome words of any disposition should be tossed into the 'adverb' box.

Thrax's great successor, the Alexandrian Apollonius Dyscolus, who wrote in the second century AD, refined Thrax's definitions somewhat, but generally accepted the earlier man's eight parts of speech. On the whole, it was Apollonius's account that was passed on to the Roman grammarians.

The first Roman grammarian of whom we know is Varro. Varro was a remarkably original scholar, and his classification of the parts of speech, in a curious adumbration of the 20th-century X-bar system, set up a fourfold distinction based entirely upon the presence or absence of case-marking and tense-marking. This led to just four parts of speech: nouns (including adjectives), verbs, participles, and 'adverbs' (a grab-bag containing everything else). However, Varro's ideas did not prevail, and his Roman successors, led by Priscian, opted for a system closer to that of Thrax. But, finding no class of articles in Latin, they chose to separate the essentially syntax-free interjections from the adverbs and to elevate them to a separate part of speech, possibly feeling that Latin required as many parts of speech as Greek.

This eight-class system survived well into the Middle Ages, and it was accepted by the medieval grammarians we call the Modistae. The Modistae managed to improve somewhat on the definitions offered by their classical predecessors, but they also laid greater stress on the differences between nouns and adjectives, a tendency which led eventually to the recognition of these two as distinct parts of speech, though not for several centuries more.

In England, the grammarians of the 16th and 17th centuries generally adhered to the Priscianic

eight-class system, though the English articles, having no Latin counterparts, were an embarrassment which received varying treatments: they were sometimes classed as nouns adjective, at other times as belonging to no part of speech at all. The playwright Ben Jonson boldly assigned them to a class of their own, but his example was not widely followed. The English participle, having no noun-like characteristics, came increasingly to be regarded as no more than a sub-class of the verb.

The culmination of developments in the English-speaking world can be seen in the work of the influential American-born grammarian Lindley Murray, whose 1795 grammar recognized the following eight parts of speech: noun, verb, adjective, adverb, pronoun, preposition, conjunction, and interjection. With Murray's work, the adjective was here to stay, while the participle was confined to the dustbin of history. Murray's eightfold classification would become the universal standard system in the English-speaking world, taught in schools for generations, often still taught today in those few schools which attempt to teach English grammar at all, still used in many dictionaries of English, and even presented in some textbooks of linguistics, such as Yule (1996). In short, it was Murray's system which became the backbone of the kind of 'traditional grammar' taught in the English-speaking world (and elsewhere) wherever grammar was taught in schools at all.

A survey of pre-twentieth-century work on parts of speech can be found in Robins (1967: *passim*) or in Lepschy (1994: *passim*).

### 3. The Twentieth Century

The rise of historical and comparative linguistics in Europe toward the end of the 18th century distracted attention from the consideration of general questions of grammar. Even when general linguistics again came to prominence in the late 19th and early 20th centuries, the parts of speech received little attention. For example, the sole discussion to be found in Saussure's famous *Cours* is an observation that French *bon marché* 'cheap' is difficult to classify, followed by the statement that '[T]he division of words into substantives, verbs, adjectives, etc. is not an undeniable linguistic reality' (p. 110). The rare discussions that we find largely regurgitate Murray's system, though the linguists working on non-European languages, and especially American languages, were coming to realize that these did not exhibit the same parts of speech as European languages. Edward Sapir, in his classic 1921 book *Language*, observes that the conventional classification is only 'a vague, wavering approximation' (p. 117), and goes on to note that many languages have fewer parts of speech than European languages. He cites the example of the American language Yana, which he says has only two parts of speech, nouns and verbs, with all the equiva-

lents of the various grammatical parts of speech being formally verbs. Sapir does conclude, however, that the categories of noun and verb are truly universal, though he admits that in some cases the distinction between these two is 'elusive' (p. 119).

Otto Jespersen, in his 1924 study, makes a number of interesting remarks. He begins by noting the great difficulty of setting up parts of speech on a principled basis. Citing Varro's scheme with admiration, he points out that a fourfold classification in terms of gender and tense would be just as logical but would lead to the four classes of nouns (including adjectives), personal pronouns, participles and verbs (p. 58; he says nothing here about the remaining classes). Later (pp. 82-3), he queries the class of pronouns on the ground that English contains a wide variety of pro-forms which cannot reasonably be regarded as a single class. (See Schachter 1985: 24-35 for a survey of pro-forms in the world's languages.) On p. 88, he proposes to combine prepositions with those items which form the second elements of phrasal verbs, like the *on* of *put on*; these last he effectively classes as *intransitive prepositions*, though he does not use the term. Eventually, on p. 91, he arrives at the following classes: (1) substantives (including proper names), (2) adjectives (and he is tempted to unite substantives and adjectives in a single class of nouns), (3) pronouns (including numerals like *three* and certain adverbs like *then*), (4) verbs (with doubts about the inclusion of non-finite forms, which he calls *verbids*), and (5) particles, a grab-bag containing everything else. Jespersen attaches great importance to semantic criteria, and he is accordingly unhappy with assigning *my* and *mine*, or determiner *this* and pronoun *this*, to different categories.

Jespersen also proposes and develops a distinction between *primary* and *secondary* classes, a distinction occasionally taken up more recently. For example, Dixon (1972) relegates certain small word-classes in the Australian language Dyirbal, including the tiny set of noun-class markers, to secondary status, and Quirk *et al.* (1985) assign the two classes of *numerals* and *interjections* to secondary status in English.

Leonard Bloomfield, in his famous 1933 book *Language*, contents himself with a few scattered remarks on the subject. And he is pessimistic. On p. 269, he observes that differing criteria lead to different results, and concludes that 'a system of parts of speech in a language like English cannot be set up in any fully satisfactory way'.

Bloomfield's successors, the American structuralists, developed a great interest in distribution as a major criterion for identifying linguistic categories at every level. Distributional criteria began to feature prominently in the writings of such linguists as Kenneth Pike, Eugene Nida, and Zellig Harris. None of these displayed any great interest in the parts of speech, but another American did.

Charles Fries, in his 1952 book, adopted an

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uncompromisingly distributional approach to the problem of identifying word classes in English. Applying what he presented as the most rigorous principles of post-Bloomfieldian distributional analysis, he arrived at an unprecedented system involving four major classes and fifteen minor ones, all of them scrupulously unnamed. His four major categories corresponded to the familiar classes of nouns (including pronouns), lexical verbs, adjectives, and adverbs. His minor classes were as follows: determiners (including quantifiers and all possessive NPs), auxiliary verbs, the single word *not*, degree modifiers, coordinating conjunctions, prepositions, the dummy verb *do*, existential *there*, all WH-words, subordinating conjunctions (including conjuncts like *nevertheless* and *therefore*), utterance-introducers like *well* and *oh*, the two words *yes* and *no*, attention-getters like *look* and *listen*, the single word *please*, and the single word *let's*.

Fries's treatment was not particularly influential, but it did highlight the value of distribution as a criterion in setting up lexical categories. In years to come, distribution would come to be seen as more important than the traditional fixation on inflectional morphology, particularly for languages in which inflectional morphology is weakly developed or absent altogether.

In his 1955 textbook, the American Henry Gleason took a rather different stance on parts of speech. He proposed, somewhat against the American distributionalist trend, to take inflectional morphology (specifically, paradigms) as the primary criterion. On this basis, he recognized for English just four major parts of speech: nouns, personal pronouns, verbs, and adjectives. These he called the *paradigmatic classes*. All the remaining classes were distinguished as *syntactic classes*, and about these he had little to say. Curiously, words like *beautiful* were not classed as adjectives, on the ground that they failed to participate in the adjectival paradigm illustrated by *big/bigger/biggest*. On the basis of syntactic distribution, Gleason coined the superordinate term *adjectival* to include the class of true adjectives and the (unnamed) class containing words like *beautiful*. In this, Gleason has been followed by perhaps no one.

The maverick American Charles Hockett, in his 1958 textbook, set an example rarely followed since by devoting an entire chapter to parts of speech. In his typically original manner, Hockett recognized not only the familiar categories noun (N), verb (V) and adjective (A), but further the compound categories NA (for words like *savage*), NV (*love*), AV (*clean*), and NAV (*fancy*). This gave him seven major classes for English, to which he added only one more, the class of *particles*, or uninflected words, with all further distinctions in this group being relegated to the status of subcategories. Hockett's proposals were not taken up.

Fries, Gleason, and Hockett aside, the tradition in

the 1950s was still one of slavish adherence to the 'traditional' eight parts of speech. But things were about to change.

In the 1950s, the American linguist Noam Chomsky introduced his new emphasis on syntax, together with his concept of generative grammar. Within a few years, Chomsky and his colleagues had proposed a number of new parts of speech, not recognized in the older framework, all of them intended originally for English. The principal developments were as follows.

To begin with, the English *auxiliaries* were separated from the class of verbs and set up as a distinct class in their own right, a development which will be considered below. Next, a class of *determiners* was identified, containing articles, demonstratives and quantifiers (at least), and some linguists went further, splitting off *quantifiers* as a distinct category. A (small) class of *complementizers* was separated from the traditional class of conjunctions, containing the items *that* (as in *Susie says that she's coming*) and *whether* (as in *I don't know whether she's coming*). The *degree modifiers* (like *very* and *too*) were separated from the traditional class of adverbs. And a class of *particles*, occasionally recognized in the past for dealing with uninflected words, was set up specifically to provide for the second elements of the English phrasal verbs like *make up* and *take off*. Finally, the subordinating conjunctions were split off from the traditional class of conjunctions as a distinct class of *subordinators*. With a few complications to be discussed below, the result was the modern classification of parts of speech in English.

### 4. Criteria for Identifying Parts of Speech

In principle, there are two distinct but related questions to be asked: (1) what parts of speech should we set up?, and (2) on what basis do we assign words to them? In practice, these two questions are closely related, and we usually consider them together. Over the centuries, at least four different types of criteria have been proposed for identifying parts of speech.

#### 4.1 Meaning

A word is assigned to a part of speech on the basis of its meaning. Though popular in the past, this criterion is rejected today, since it is hopelessly misleading: lexical categories are syntactic categories, not semantic ones, and the meaning of a word is at best no more than a very rough guide to its likely word class.

Semantically based definitions are called *notional definitions*, and notional definitions of varying degrees of specificity were the norm in traditional grammar. For example, J. C. Nesfield, in the 1922 edition of his enormously successful grammar, tells us 'A noun is a word used for naming anything', and goes on to explain that 'anything' means 'anything we can speak about' (p. 8). Well, we can certainly speak



about colours, and the word *red* is undeniably the name of a colour, and so, by this definition, it should be a noun—yet it is most commonly an adjective.

The class of verbs is exceptionally difficult to define by notional criteria—or perhaps in any other way—and Nesfield's effort is singularly inept. He defines a verb as 'a word used for saying something about something else'.

Today most linguists would agree that, for example, the word *arrival* is no more the 'name' of anything than *arrive* is, and that *absence* is no more a name than *absent*. The first word of each pair is a noun because it behaves grammatically like a noun, and not because it serves as a label for something 'out there'.

#### 4.2 Distribution

A word is assigned to a part of speech on the basis of its distribution, the range of syntactic positions in which it can occur. Though not much favoured in the past, this criterion is probably the most important of all today.

Distributional criteria were favoured by the American structuralists, who developed the concept of a *frame*. Informally, a frame is a phrase or a sentence with a hole in it, and the set of linguistic objects which can successfully fill that hole represents the class of objects defined by the frame. For example, providing we restrict ourselves to single words, the frame *The \_\_\_\_\_ was/were nice* picks out the class of nouns in English, since the grammar of English permits nouns, and only nouns, to fill this blank in order to produce a grammatical sentence—though not necessarily a sensible one. We might fill the blank with any of *girl*, *frogs*, *intervention*, *singing*, or *torture* and get a well-formed (if not always plausible) sentence, and hence all these words are nouns. In contrast, none of the words *with*, *clever*, *sing*, *intervene*, or *before* can successfully fill this blank, and hence these words cannot be nouns.

Frames must be used with caution. For example, the frame *a \_\_\_\_\_ dress* looks as though it might pick out adjectives, and it does indeed accept adjectives like *pretty*, *red*, and *short*. However, it also accepts the words *cocktail*, *maternity*, and *nylon*—yet these are not adjectives, but nouns. This particular frame accepts both adjectives and nouns (though nothing else), and so a successful result only narrows down the possibilities to these two classes. A somewhat better frame for adjectives is *a very \_\_\_\_\_ dress*, which does not accept nouns, though even this fails to accept certain adjectives of restricted distribution, like *awake*.

In any case, frames suffer from certain weaknesses. First, a frame chosen at random is unlikely to produce anything useful. For example, the frame *I want the cat \_\_\_\_\_ the bed* accepts a heterogeneous class of items, including *and*, *under*, *clawing*, and (ignoring punctuation) *not*. Hence, in large measure, frames can only be employed successfully by a linguist who already knows what the 'right' answer is. Second, such simple linear

frames ignore syntactic structure. As the last example shows, a diverse variety of syntactic structures may underlie similar or identical sequences of words.

More principled than frames is the use of subcategorization, or valency: the further syntactic categories selected by a lexical item. Subcategorization has a chequered history here. On the one hand, hardly anybody has ever wanted to distinguish transitive and intransitive verbs as distinct classes on the basis of their different valency. On the other, few linguists have ever wanted to combine the *off* of *She took her coat off* with the *off* of *She took her coat off the peg* into a single category of prepositions differing only in valency, or 'transitivity'—though recall Jespersen. See below for more on this.

#### 4.3 Inflection

A word is assigned to a part of speech on the basis of its inflectional properties, the variation in form which it exhibits for grammatical purposes. Of unsurpassed importance in the classical period, this criterion is still very important today.

Even in English, with its very modest inflectional system, inflection is useful in identifying parts of speech: nouns inflect for number (*dog/dogs*), verbs inflect for tense (*love/loved*) and take the *-ing* inflection (*loving*), adjectives inflect for degree (*big/bigger/biggest*), and pronouns inflect for case (*I/me*). In inflectionally richer languages, like Russian and Navajo, inflection may be a very valuable criterion for identifying parts of speech. However, in languages which lack inflectional morphology altogether, like Vietnamese, this criterion is useless.

#### 4.4 Derivation

A word is assigned to a part of speech on the basis of its derivational behaviour, its ability to take word-forming affixes to yield other words. Of weak importance long ago, when derivation was not clearly distinguished from inflection, this criterion is of more significance today.

In English, adjectives take the derivational prefix *un-* to yield new adjectives, and the derivational suffix *-ly* to yield adverbs, as in *happy*, *unhappy*, and *happily*. In languages with a rich derivational morphology, this criterion can be valuable, while in languages that have no derivational morphology, like Vietnamese, it is of no assistance.

Today perhaps no one regards meaning as a useful criterion in testing for parts of speech. The remaining three criteria, however, are regarded as valuable, though distribution is probably the most useful of all, and is the only available criterion in languages which are lacking in morphology.

Other criteria are occasionally proposed. For example, Schachter (1985) suggests that a word's range of grammatical functions might be invoked: whether it can function as a subject, an object, a predicate, and

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so on. But this approach requires that grammatical functions should be clearly identified first—not an easy task—and, in any case, most linguists would agree that these functions are typically filled by phrases, not by individual words.

Finally, it should be noted that not all words can be assigned to parts of speech. Many languages possess *syncategorematic* items which exhibit unique behaviour and cannot sensibly be assigned to any class; English examples include negative *not*, infinitival *to*, polite *please*, and others. The European tradition of tossing most of these troublesome words into the dustbin class of ‘adverbs’, still followed by many dictionaries, is indefensible.

### 5. The Universality of Parts of Speech

As Sapir noted, it is perfectly clear that languages differ substantially in their parts of speech. Some of these differences are minor. For example, Japanese, Turkish, and Basque have a class of items which resemble the English prepositions but which follow their objects, as in Japanese *Tookyo de* ‘in Tokyo’ and *Tookyo e* ‘to Tokyo’. These have been dubbed *postpositions*, and the cover term *adpositions* has been coined to include prepositions and postpositions (and the rarer circumpositions). But not all languages have a class of adpositions: for example, many American and Australian languages have no such class, using other grammatical devices to do the jobs done by adpositions. On the other hand, Dixon (1977a) concludes that, in the Australian language Yidiny, the functions performed in English by adverbs are divided among several quite different parts of speech: *locational qualifiers*, *time qualifiers*, and true adverbs, all distinguished by morphology and syntax (p. 121), and other Australian languages are similar. See Dixon (1980: ch. 9) for a survey.

A number of languages, including for example West Greenlandic Eskimo (Fortescue 1984: 204) and the Brazilian language Wari’ (Everett and Kern 1997: 2), have no class of adjectives, adjectival meanings being variously expressed by nouns or verbs. But many languages possess an entirely distinctive class of expressive items often called *ideophones*; these sometimes have phonological and/or syntactic characteristics which set them apart from all other words, even from the possibly universal class of *interjections*.

A fundamental, and often superordinate, distinction is that between *lexical words* (*full words*), which have clear semantic content, and *grammatical words* (*empty words*, *particles*), which have mainly grammatical functions. Sasse (1994: section 4) concludes that this contrast is truly universal: even highly inflected languages like the Iroquoian languages, in which almost all morphemes are bound, possess numerous particles. Indeed, linguists have occasionally suggested that some particular languages have *only* a lexical-word/particle contrast; see below.

A further difference, not to be confused with the preceding, concerns *open classes* and *closed classes*. An open class is large and accepts new members readily; English examples include nouns (*CD-ROM*), verbs (*escalate*) and adjectives (*user-friendly*). A closed class is small and accepts new members only with difficulty; English examples include pronouns, conjunctions, and prepositions. Schachter (1985: 5) concludes that nouns, verbs, adjectives and adverbs are the only open classes which ever occur in any language. All languages have open classes, but doubt has been expressed as to whether closed classes are universally present, particularly in polysynthetic languages in which most grammatical functions are performed by affixes. Nevertheless, Schachter (1985: 23–60) concludes that closed classes are also universal, though he is not sure that any *single* closed class is universal.

Languages can differ along the open/closed parameter, even when they have similar classes. Thus, Dixon (1977b) notes that the class of adjectives, open in English and many other languages, is closed in still other languages, which have only 6–12 adjectives. In languages in which adjectives are a closed class or absent altogether, most of the meanings expressed by adjectives in English are expressed by nouns (‘red-one’) or by verbs (‘be-red’). And we find curiosities, such as the presence in Wari’ of only a single adposition.

Indeed, it appears that nouns and verbs are the only classes for which anyone wants to defend universal status—recall Sapir’s remarks above. However, the universal status of these two categories is not beyond dispute. Prominent here are the Salishan and Wakashan families of the Pacific Northwest of North America. For example, Hockett (1958: 224–5) argues that the Wakashan language Nootka lacks a distinction between nouns and verbs. In Nootka, Hockett says, there exist only two parts of speech, *inflected* and *uninflected*. The inflected class contains stems of a wide range of meanings which would be represented as different parts of speech in English. His examples are the four stems /wala:k-/ ‘go’, /qo:ʔas-/ ‘man, person’, /ʔi:h-/ ‘large’ and /ʔathija-/ ‘at night’. When unaffixed, these have nounlike uses, and can be translated ‘a going, a trip’, ‘a man, a person’, ‘a large thing’ and ‘the night-time’. With the inflectional suffix /-ma/, all become verblike, and can be translated ‘he goes’, ‘he is a man’, ‘he is large’ and ‘he does it at night’.

Similar claims are found elsewhere. For example, Kinkade (1992: 361) concludes that parts of speech in the Salishan languages are generally absent or at least only weakly developed. On the other hand, Schachter (1985: 11–3; 1992: 164), drawing on Jacobsen (1979), declares firmly that the noun/verb distinction is ‘apparently universal’, and argues that even in the Pacific-coast languages close scrutiny invariably reveals subtle but clear distinctions between noun-like and verb-like classes: for example,

certain suffixes may be attachable only to one class of stems or the other.

Recently there have been further suggestions that the noun/verb contrast might not be universal. Sasse (1993) argues that the Iroquoian language Cayuga lacks such a contrast, and Broschart (1997) concludes that the Austronesian language Tongan likewise has no such contrast, but functions instead in terms of what he calls a 'type/token' contrast. Moreover, Sasse (1994: section 5) argues that the noun/verb contrast is far from universal, citing data from several diverse languages; Sasse suggests that the apparent contrast noted in these languages is at best a mere subcategorization of a single larger category of lexical words and at worst an illusion resulting from pragmatic constraints.

Finally, it should be noted that there is a potential problem in identifying word classes across languages. If, using criteria appropriate to English, we establish a class containing words like *man* and *house*, and, using somewhat different criteria appropriate to Latin, we establish a class containing words like *vir* and *domus*, what right do we have to conclude that we are looking at a class of nouns in both languages?

The traditional answer is to appeal to meaning: the two classes contain many words of identical or similar meaning, and, moreover, they both contain many words expressing certain *types* of meaning, such as labels for classes of physical objects.

But there are other possibilities. For example, again using suitable criteria, we can show that these words in both languages typically constitute the heads of phrases, and that the resulting phrases in both languages perform similar syntactic functions, such as serving as grammatical subjects, where subjects in turn may be identified by the semi-universal criteria advanced by Keenan (1976). In short, a refusal to identify the English class with the Latin class would deprive us of some rather successful generalizations about the syntactic structures of languages.

## 6. Current Controversies

Even for English, there is no complete consensus as to what parts of speech should be recognized. For example, as mentioned above, some linguists prefer to separate out the quantifiers, like *many* and *both*, as a distinct part of speech from determiners. However, in spite of the somewhat distinctive semantics of the quantifiers, their syntactic behaviour is not noticeably different from that of the other determiners, and hence most linguists prefer to regard all of these as a single class.

More interestingly, some linguists have proposed that valency (subcategorization) should be rejected as a criterion. For example, Radford (1988: 134–5) argues that prepositions, subordinators and certain adverbs might be combined into a single class whose members differ only in valency: *I'd never met her*

*before, I'd never met her before the party, I'd never met her before you held your party.* But, while a few words, like *before*, *after*, *since*, and *until*, can exhibit two or all three of these types of behaviour, the great majority of words which can be prepositions (like *to*, *under*, and *during*) cannot behave as subordinators, while the great majority of subordinators (like *if*, *although*, and *while*) cannot behave as prepositions, and the majority of both these groups cannot behave as adverbs. Consequently, combining them into a single class would give us a word class in which the overwhelming majority of members would have to be marked as exceptional. For most linguists, this price is too high to pay, and we are better off recognizing three classes of unexceptional items with a few common members. This result illustrates the usual basis for deciding on the parts of speech to be recognized: we want the most economical overall grammar, and reducing the number of classes is not economical if doing so greatly increases the number of statements which must be made.

But the greatest controversy of all involves the English auxiliaries. On the whole, in spite of departures like that of Fries, the tradition has been to class these as a mere subcategory of verbs. This has been done because the auxiliaries, in spite of their numerous distinguishing features, share certain important properties with lexical verbs, such as position, tense-marking, and (for non-modal auxiliaries only) a set of non-finite forms. However, our auxiliaries *do* exhibit some unusual characteristics, such as the ability to be inverted and negated, which are not shared with lexical verbs. Impressed by these differences, Noam Chomsky proposed, at least as early as Chomsky (1957), to assign the English auxiliaries to an entirely distinct part of speech. This decision has remained a central tenet of Chomskyan theorizing ever since, as the *AUX* node, variously renamed *INFL*, or *I*, has occupied a distinctive position in Chomskyan theorizing, not just for English but universally. This position has been reinforced by the discovery that certain languages, like the Australian language Warlpiri, possess a totally distinct class of auxiliaries with no verb-like properties at all (Hale 1973).

However, most linguists not of a Chomskyan persuasion have clung to the traditional view that the English auxiliaries are verbs, a position defended vigorously by Pullum and Wilson (1977). Among the few non-Chomskyan linguists to defy the traditional position are Randolph Quirk and his colleagues, who, in Quirk *et al.* (1985: 67–8) and elsewhere, class lexical verbs, primary auxiliaries (like *be* and *have*) and modal auxiliaries (like *can* and *must*) as three separate parts of speech, while acknowledging that there exists a good case for combining the three.

Finally, it should be noted that a few linguists are still prepared to reject the traditional categories altogether in favour of what they see as more principled

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classifications. A leading figure here is Richard Hudson, whose various works exhibit a novel approach unencumbered by previous thinking. Like Radford, Hudson categorically rejects valency as a criterion, and, in Hudson (1990: 168–71), he proposes just four classes for English: nouns (including pronouns and determiners, since the difference between pronominal *this* and determiner *this* is purely one of valency), verbs (including auxiliaries), ad-words (including adjectives, adverbs, prepositions, and subordinators) and (coordinating) conjunctions. It appears that debates over parts of speech, even for English, will continue for some time yet.

For the most recent surveys of parts of speech, see Schachter (1985) and Sasse (1994), which reach some rather different conclusions, notably on whether the noun/verb contrast is universal.

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## Passive and Related Constructions

I. Roberts

The sentences in (1) illustrate the active–passive alternation in English:

- The police arrested the students. (Active) (1a)
- The students were arrested by the police. (Passive) (1b)

Sentence-pairs like that in (1) are 'thematic paraphrases' of each other, in the sense that the semantic roles borne by the participants are identical in the two cases. In each example, the Noun Phrase *the police* is understood as denoting the Agent of *arrest* (it is the



police who do the arresting), while *the students* denotes the arrested party (often called the Patient or Theme of the action). This semantic equivalence holds despite the considerable formal differences in word order, agreement, etc., between the two sentences. For this reason, the active-passive alternation has played an important role in the development of generative grammar. Many versions of generative grammar have maintained that there is a level of syntactic representation, deep structure or D-structure, where thematic-paraphrase relations are structurally represented. At this level of representation, (1a) and (1b) are equivalent. The observed differences are then attributed to the operation of one or more transformations. For these reasons, the active-passive alternation has played a central role in the development of the ideas of different levels of syntactic structure and of how the mapping between them is achieved.

### 1. The Core Passive

In this section, various analyses of the 'core' active-passive alternation will be discussed in more detail. In Sect. 2, a number of related constructions are discussed. Sect. 3 discusses passive and passive-like constructions from a cross-linguistic perspective.

Comparing (1a) and (1b), three salient differences can be seen. First, the object of the active (1a) appears in the subject position of the passive (1b) and shows subject properties such as agreement with the finite verb. Second, the subject of (1a) appears as the object of the Preposition *by* in (1b); moreover, the *by*-phrase is optional, while structural subjects are not optional. Third, the verb appears as a participle in (1b) and the auxiliary *be* carries the tense and agreement marking.

#### 1.1 Early Transformational Analyses

In the earliest versions of generative grammar, these three properties of passives were handled together. The deep structure representation was taken to be close to the active sentence. Passives were derived from deep structure by the operation of a PASSIVE transformation. PASSIVE placed the direct object in the subject position, placed the subject in a peripheral position and inserted *by*, and inserted *be* and participial marking. Since actives and passives had a common deep structure, the thematic paraphrase relation was guaranteed.

Like many other standard-theory transformations, PASSIVE was a precise encoding of the formal operations that related classes of sentences. However, in formal terms placing the deep object in the surface subject position was just one facet of a composite operation. As such, it was not possible to relate PASSIVE in English to the comparable operation in other languages where, for example, no auxiliary is inserted. This drawback with the standard theory led some researchers, especially Ross, Perlmutter, and Postal, to consider that the change in grammatical

functions was central. This line of thought led to the development of Relational Grammar (see 04-069), whose central tenet is that grammatical functions should be primitive components of syntactic theory (see in particular the papers in Perlmutter 1983).

#### 1.2 The Extended Standard Theory and Principles and Parameters Theory

With the emphasis on restricting the power of transformational rules that characterized the Extended Standard Theory (see in particular the essays in Chomsky 1977), composite operations like PASSIVE were broken down. Moreover, general conditions on rule application were taken to trigger various aspects of the derivation of a passive sentence. This tendency led to the development of the theory of Principles and Parameters (see 04-124), where all transformations are collapsed as a single operation of Move-category. The analysis of passives by Chomsky (1981) posits the following deep (or D-) structure (2):

e were arrest + ed the students (2)

Chomsky proposes a well-formedness condition, which he calls the theta-criterion. This condition states that any position filled by an argument must be assigned exactly one semantic role, and semantic roles can only be assigned to positions that are filled by arguments. Since the subject position does not contain an argument, no thematic role is assigned to it. This makes it possible for the object NP to move there. Movement of the object is made obligatory by the Case Filter, which requires all phonologically realized NPs to have abstract Case. Passive participles are assumed not to assign Case, and so the object must move to subject position. General conditions on movement ensure that the subject position is the only available position. In this way, the central properties of PASSIVE are derived from the interaction of general conditions. Chomsky argues that the term 'passive construction' does not correspond to a theoretical entity. This and other construction labels are merely convenient mnemonics for structures that result from the interaction of general conditions on representation.

#### 1.3 Recent Developments

One disadvantage of the analysis in Chomsky (1981) concerns the semantic role assigned to the subject. Chomsky's analysis regards this role as 'suspended' in passives. However, there is evidence that it is present. Certain modifiers that are sensitive to the presence of a subject argument are able to appear in passives (3):

The students were purposefully arrested. (3a)

The students were arrested to avoid a fuss. (3b)

Evidence like this shows that the subject role is assigned to an 'implicit argument' in passives. A number of researchers in the mid-1980s (Jaeggli

1986; Baker, et al. 1989) accounted for this phenomenon with the idea that the participial morphology that forms the passive verb is an affixal argument similar to the special clitics found in many languages.

An important development in the late 1980s was the VP-internal subject hypothesis (see *inter alia* Kuroda 1988; Sportiche 1988; Koopmann and Sportiche 1991). This is the idea that subjects are always generated inside the maximal projection of V. As a consequence, the surface subject position never contains an argument. Normally, the subject is raised to the surface subject position. In passives, it seems that the subject remains in VP as an implicit argument, while the object is raised. The details of this analysis are a matter for ongoing research at the time of writing.

## 2. Related Constructions

A number of other constructions have properties that are similar to those of the core passive. It has been a matter for debate to what extent some of these should be assimilated to or differentiated from the core passive.

### 2.1 Adjectival Passives

Adjectival passives were first identified by Wasow (1977). Adjectival passives differ from core passives in that they can occur in typical adjective positions: after intensifiers, after copular verbs, and affixed by *un-*. Moreover, whilst core passives may allow any object NP to become a subject, adjectival passives impose the further constraint that the object receive its semantic role from the participle. Hence certain classes of verbs may undergo the core passive, but may not form adjectival passives. For example, it is usually maintained that in sentences like (4) *John* is an argument of *sing* but not of *hear* (*John singing* is the argument of *hear*). *Hear* may form a core passive but not an adjectival passive in this construction, as (5) shows:

We heard John singing. (4)

John was heard singing. (5a)

\*John was unheard singing. (5b)  
(Cf. John was unheard).

Wasow argued that adjectival passives were derived by a lexical redundancy rule (hence their sensitivity to semantic roles), while core passives were derived by transformation. Several important issues were raised by Wasow's paper. What is the precise division of labor between lexical rules and transformations? Many authors inclined to the view that lexical rules could largely replace transformations. This idea led to the development of Lexical Functional Grammar (see, for example, the papers in Bresnan 1982).

What is the nature of the constraint on the formation of adjectival passives? Wasow suggested that

only Themes could become subjects of adjectival passives, but Levin and Rappaport (1986) argued that the correct generalization referred to any NP complement capable of being the sole complement to the verb. A third issue relates to aspect. Adjectival passives are stative, while core passives are able to be dynamic. This is connected to the traditional distinction between *Zustandspassiv* and *Vorgangspassiv*.

### 2.2 Passive in NP

Chomsky (1970) noticed the parallel between standard clausal active-passive pairs and comparable pairs inside nominals (6)–(7):

The barbarians destroyed Rome. (6a)

Rome was destroyed by the barbarians. (6b)

the barbarians' destruction of Rome (7a)

Rome's destruction by the barbarians (7b)

This parallel between clauses and nominals was instrumental in the development of a category-neutral base component, which became known as X'-theory.

However, the parallel is not as straightforward as it first appears. Nominals, unlike verbs, do not usually require a 'deep object' (8):

\*There was destroyed by the barbarians. (8a)

the destruction by the barbarians (8b)

Second, Anderson (1977) showed that passive in NP is subject to a thematic constraint that she called the Affectedness Constraint. The putatively passivized NP must be construed as 'affected' by the action denoted by the head noun. The Affectedness Constraint underlies the contrast between (7) and (9):

the goalkeeper's fear of the penalty (9a)

\*the penalty's fear by the goalkeeper (9b)

Also, like adjectival passives, passive in NP requires that the fronted constituent be a semantic dependent of the head (10):

We believe John to be incompetent (10a)

\*our belief of John to be incompetent (10b)

Facts of this kind have led to much debate about the correct analysis of passive in NP and its relationship to both core and to adjectival passives. For a later view, see Grimshaw (1991).

### 2.3 Middles and Ergatives

English has two further constructions that are similar to passives in that a 'deep' direct object appears as a superficial subject. An interesting feature of both alternations is that they are not signaled by any morphological mark on the verb. Ergatives and middles are illustrated in (11) and (12) respectively:

- John cooked the goose. (11a)  
 The goose cooked. (11b)  
 John painted the floor. (12a)  
 The floor painted easily. (12b)

In both (11) and (12), the object of (a) is the subject of (b). The subject of (a) disappears. It should be clear that an account along the general lines of Chomsky's (1981) analysis of passives would carry over to these cases without radical alteration.

However, both middles and ergatives are much more restricted than the core passives. As Jaeggli (1986) showed, middles obey the Affectedness Constraint (13):

- \*Penalties fear easily. (13)

Moreover, middles appear to require the presence of a manner adverb like *easily*. The range and the stringency of the constraints middles are subject to points to a lexical analysis, as Jaeggli suggests (but cf. Keyser and Roeper 1984; Roberts 1987 for a different view).

Ergatives are related to causative transitives (this was observed in Lakoff 1965) and tend to be dynamic in aspect, while middles are stative. Ergatives are lexically restricted in idiosyncratic ways, as Keyser and Roeper show in some detail. Also, ergatives differ from passives and middles in that the subject semantic role is entirely eliminated. In passives, it is present as an implicit argument, as was shown. In middles, it is at least implied, as the following contrasts (due to Marantz 1984) show (14):

- The clothes were hanging on the line. (Ergative) (14a)  
 These clothes hang on the line easily. (Middle) (14b)  
 The clothes were hung on the line. (Passive) (14c)

As with the constructions discussed above, middles and ergatives have occasioned lively debate regarding the correct division of labor between lexical and syntactic rules. At the time of writing, i.e., late twentieth century, this debate is far from resolved.

#### 2.4 Unaccusatives

A further class of verbs whose surface subject has been argued to correspond to an underlying object is the class of unaccusatives. The **unaccusative hypothesis**, associated with Perlmutter (1983) and Burzio (1986), states that *the single argument of some intransitive verbs is an underlying object*. The intransitives that have a single object argument are known as 'unaccusatives' (e.g. *arrive*, etc.), while those that have a single subject argument are usually called 'unergatives' (e.g. *telephone*, etc.).

Unaccusatives are like passive participles in that they are unable to assign Accusative Case to their object; they are literally un-accusative. Because of this

peculiarity, which must be a lexical property, the object must undergo movement to the subject position in order to prevent a violation of the Case Filter. This is just like what happens with the object of a passive participle (see Sect. 1.2). So, the sentence *John has arrived* involves movement of *John* from the underlying object position to the superficial subject position:

- John<sub>i</sub> has arrived t<sub>i</sub>. (15)

Unaccusative verbs have a number of characteristic properties (see Levin and Rapoport-Hovav (1995) for a very detailed discussion of this point). Typically, their single argument is not an Agent (compare *arrive* with *telephone*). The single argument of an unaccusative usually denotes an entity that undergoes a change of state or location: *come*, *go*, *die*, *grow*, *fade*, *redde*n, etc. If unaccusatives form a more or less well-defined lexical class in this way, then it follows that they should be found in every language. This is now generally admitted.

Certain things correlate with unaccusativity. In Italian, for example, there is a choice in compound tenses between the auxiliary 'have' (*avere*) and the auxiliary 'be' (*essere*). Unaccusative verbs take *essere* as their auxiliary, while other intransitives have *avere*. In English, only unaccusative Verbs can appear in 'presentational' sentences like (16):

- (a) After a long delay, there arrived an extremely old, beaten-up train. (16)  
 (b) \*Five minutes later, there telephoned a man with a funny accent.

Also, only compound adjectives formed using the participles of unaccusatives can be prenominal:

- (a) a newly-arrived recruit (17)  
 (b) \*a recently-telephoned boy

(Notice that (17b) can mean 'a boy who has recently been telephoned'; however, it cannot mean 'a boy who has recently telephoned (someone else)'. The first interpretation is the passive interpretation of *telephoned*—so this is another parallel between unaccusatives and passives).

Another important point is that unaccusative verbs cannot have thematic subjects—if they did, there would be nowhere for their object to move to in order to satisfy the Case Filter. This is summed up by Burzio's generalisation:

- If a Verb has no Accusative Case, it has no subject role (18)

Given (18), it's enough to say that the lexical property of unaccusatives is that they do not assign Accusative Case to their object. Also, if we think of the 'demotion' of subjects that is characteristic of passives as being a kind of lack of a subject thematic role, then (18), read from right to left, gives us another reason

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for the lack of Accusative Case assignment by passive participles (see Sect. 1.2). In passives, the subject is demoted (i.e. 'lacking') and so there is no Accusative Case available for the object. Presumably, middles and ergatives can be treated in the same way.

Burzio's generalization is a reasonably robust cross-linguistic generalization (although see below for some counterexamples), which has largely resisted reduction to deeper principles of grammar, at least when read from right to left in (18).

### 3. Cross-linguistic Aspects

#### 3.1 Impersonal Passives

Looking beyond English, passive constructions in the world's languages display a number of properties that have challenged many theories (including most of the ones mentioned above) and whose precise theoretical characterization remains controversial. The best-known such constructions are 'impersonal passives'. These are passives which feature 'demotion' of the subject without concomitant movement of the object into subject position, either because there is no object, or simply as a straightforward exception to Burzio's generalization.

The best-known cases of impersonal passives are the passives of intransitive verbs found in many languages, including notably Dutch and German. (19) gives a German example:

- Es wurde getanzt. (19)  
It was danced  
'There was dancing/People danced.'

Such constructions support the idea that the central feature of passives is subject 'demotion', since here there is no object to move into the subject position. It is important to note that the position preceding the finite verb *wurde* in (19) is arguably not the subject position, but simply the first position, which in German must be filled in declarative main clauses following the general verb-second rule of this language. Thus, an adverb may also occupy this position:

- Gestern wurde getanzt. (20)  
Yesterday was danced  
'There was dancing yesterday/People danced yesterday.'

In a subordinate clause introduced by *daß*, no subject appears at all:

- Er sagte, daß getanzt wurde. (21)  
He said, that danced was.  
'He said that there was dancing/people danced.'

Although German allows passives without object-movement into subject position, and indeed with apparently no realization of the subject position at all, it does not allow passives of unaccusative intransitives or passives of transitives where the object remains in the Accusative Case:

- (a) \*Es wurde gefallen. (22)  
It was fallen  
(b) \*Es wurde den Mann gesehen.  
It was the-ACC man seen

(22b) does not conform to Burzio's generalization. (22a) motivated the postulation of the 1-Advancement Exclusiveness Law (1AEX) of Relational Grammar (see Perlmutter and Postal (1984)), on which more below (Sect. 3.3).

Other languages allow the equivalents of (22). Turkish, as described by Öskaragöz (1980, 1982), allows passives of unaccusatives and even double passives:

- (a) Burada düş-ül-dür. (23)  
Here it-is-fallen  
'Here people fall'  
(b) Harp-ta vur-un-ul-ur.  
war-in fire-PASS-PASS-AOR  
'In war people shoot at people.'

Welsh apparently allows passives of transitives with an accusative object (Comrie (1977)):

- Fe'i lladdwyd (gan ddraig) (24)  
Prt-him kill-PASS by dragon  
'There was killed him by a dragon' (i.e. 'He was killed by a dragon')

The pronoun *i*, enclitic on the sentential particle *fe*, is clearly accusative. This is thus a straightforward violation of Burzio's generalization: the subject has been demoted but Accusative Case is nonetheless assigned.

An important implicational hierarchy was observed by Keenan (1988): if a language allows passives of the type in (24), then it allows passives of intransitives, and if it allows passives of intransitives it allows passives of transitives (i.e. normal 'personal' passives).

#### 3.2 'Si' Constructions

An important class of constructions that are clearly related to those discussed above are the *si/se* constructions found in most of the Romance languages. I will illustrate this construction with Italian data.

There are several kinds of *si* constructions which must be distinguished, as follows:

- (a) Reflexive *si*: (25)  
Gianni si è visto nello specchio.  
Gianni SI is seen in-the mirror  
'Gianni saw himself in the mirror.'  
(b) Mediopassive *si*:  
Gli spaghetti si mangiano molto qui.  
the spaghetti SI eat-3pl a-lot here  
'Spaghetti is eaten a lot here'  
(c) Impersonal *si*:  
Si mangia gli spaghetti molto qui.  
SI eats-3sg the spaghetti a-lot here  
'People eat spaghetti a lot here'  
(d) Ergative *si*:  
Il bicchiere si rompe.  
the glass SI breaks  
'The glass breaks'



Reflexive *si* corresponds to an English reflexive pronoun, and as such is not directly connected to the constructions under discussion here. The other cases of *si* are clearly related to passives and other constructions discussed above. Mediopassive *si* is distinguished from impersonal *si* in that in the former the underlying object (*gli spaghetti* in (25b)) has subject properties: it can appear in the preverbal subject position and agrees with the verb. Impersonal *si*, on the other hand, is associated with default third-person singular agreement on the verb. Moreover, the object is accusative, as the pronominal form shows:

- Li            si mangia molto qui.            (26)  
Them-Acc si eats-3sg a-lot here  
'People eat them a lot here.'

Ergative *si* shows the ergative alternation (see Sect. 2.3); alongside (25d) we find examples like (27):

- Gianni rompe il bicchiere.            (27)  
Gianni breaks the glass

Taking a cue from the clearly pronominal character of reflexive *si*, Burzio (1986) analysed *si* as a nominal element which cliticizes from subject position onto the verb. The difference between mediopassive and impersonal *si* is due to the application of object-preposing with mediopassive *si*. Belletti (1982) argued that when *si* functions as an object, it has the effect of absorbing Accusative Case and causing the logical-object argument to appear in subject position, effectively replicating the properties of the passive. When it functions as subject, it is impersonal. Both Burzio's analysis and Belletti's analysis can account for the fact that *si* appears with unergative verbs and can combine with the passive:

- (a) Si è arrivati stamattina.            (28)  
SI is arrived this-morning.  
'People/we arrived this morning.'  
(b) Si è spesso maltrattati dalla polizia.  
SI is often ill-treated by-the police  
'One is often ill-treated by the police.'

### 3.3 The 1-Advancement Exclusiveness Law (1AEX)

As already mentioned, Perlmutter and Postal (1984) postulated the 1-Advancement Exclusiveness Law (1AEX). Extrapolating away from the terminology of Relational Grammar, the 1AEX effectively states that only true logical subjects (arguments bearing a subject thematic role, or external arguments in the terminology introduced by Williams (1980)) can be 'demoted' by passive and passive-like operations of the sort discussed here. The 1AEX thus predicts that, among intransitive verbs, only unergatives can be passivized; the single argument of unaccusatives is not a true subject in the sense just defined (since it is a derived object), and so cannot be demoted. Perlmutter and Postal adduced the contrast between (19)

and (22a) in German as support for their approach (and indeed as support for the unaccusative hypothesis). However, examples like (23a) clearly seem problematic for the generalization underlying the 1AEX. The 1AEX also rules out double passivization, and so the Turkish example in (23b) poses a further problem.

Cinque's (1988) work on *si*-constructions is relevant here. He distinguishes argumental from non-argumental *si*. He notices that, although *si* appears to violate the 1AEX in examples like (28), the generalization appears to hold in the infinitival complements of raising verbs. That is, in this particular context *si* can only appear with transitive and unergative intransitive verbs:

- (a) Sembra non essersi ancora scoperto il vero colpevole.            (29)  
seems not to-be-SI yet  
discovered the real culprit  
'It seems that the real culprit has not yet been discovered.'  
(b) Sembra non essersi lavorato a sufficienza.  
seems not to-be-SI worked enough  
'It seems that one has not worked enough.'  
(c) \*Sembra essersi arrivati troppo tardi.  
seems to-be-SI arrived too late  
(d) \*Sembra non essersi stati invitati da nessuno.  
seems not to-be-SI been invited by anyone  
(Cinque (1988:524-5))

According to Cinque, argumental *si* must be implicated in demoting the logical subject (or, rather, it is the logical subject, realized as a clitic pronoun). Hence this element must obey the 1AEX by definition. Non-argumental *si*, on the other hand, is a kind of subject-agreement marker sensitive (like all subject agreement in Italian) to finiteness. As such, this element is not allowed in non-finite clauses and so, in exactly this context, only argumental *si* appears and we see the effects of the 1AEX.

Given the overall similarities between passives and *si*-constructions, it is a natural step to apply Cinque's distinction to passives. In that case, we can think that the German passive is argumental and as such obeys the 1AEX, while the Turkish passive is non-argumental, and as such is not expected to obey the 1AEX. This approach is in the same spirit as the general account of passives proposed by Baker, Johnson and Roberts (1989).

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## Perfect

Ö. Dahl

The perfect is a category found in tense-aspect systems in languages all over the world. It is arguably sufficiently uniform in its semantics and morphosyntactic behavior for it to make sense to see it as a cross-linguistically valid category. Whether it should be regarded as a tense, an aspect, an intermediate category, or something unclassifiable is an unsolved issue which motivates treating it in a separate article in this encyclopedia.

The perfect is most often expressed by periphrastic means, either by an auxiliary construction, as in English (*I have sung*), or by a particle, as in Yoruba (*mo ti ri i* 'I have seen him' where *ti* is a perfect marker with the original meaning 'already'). Historically, perfects develop out of a number of sources, among which the most well-known are resultatives, that is, constructions expressing that the result of some event is valid. Relevant resultatives are of two

types: one-place, giving rise to what is sometimes called 'be'-perfects (although this name is strictly speaking only adequate for languages with a copula); and two-place (possessive), giving rise to so-called 'have'-perfects. At least two other sources can be noted: morphemes meaning 'already' (as in the Yoruba example) and verbs or adverbs meaning 'finish' or 'finished' (as in Thai *khăw taay læw* 'he has died' where *læw* is a perfect marker originating in a verb meaning 'finish').

Opinions are divided about the proper semantic characterization of the perfect. According to one relatively widespread view, the perfect is ambiguous between a number of readings, examples of which would be the following, using the terminology of Comrie (1976):

- (a) the perfect of result (as in *I have finished my Ph.D.*),

- (b) the experiential perfect (as in *Have you ever eaten oysters?*),
- (c) the perfect of recent past (as in *Malcolm X has just been assassinated*),
- (d) the perfect of persistent situation (as in *I have lived here for five years*).

Other researchers prefer to treat the perfect as basically unambiguous, but opinions are again divided as to what the general meaning of the perfect would be. Surveying earlier theories of the meaning of the perfect, McCoard (1978) lists the following main alternatives: the 'indefinite past' theory, the 'current relevance' theory, the 'extended now' theory, and the 'embedded past' theory. The now classic analysis by Reichenbach (1947) defines the perfect as a tense where the event time precedes the point of reference, which coincides with the point of speech (whereas in the simple past, the point of reference coincides with the time of the event).

The category of perfect should be distinguished from perfective aspect. There is considerable terminological confusion in this area, which has its historical explanation in the nondistinctness of perfect and perfective in classical Latin.

In many languages, the perfect partakes in the formation of other tense-aspect forms with a more complex marking. Thus, in English, we find the pluperfect or past perfect (*I had sung*) and the future perfect (*I shall have sung*). Whether such forms should be seen as tense-aspect categories in their own right or merely as 'tenses' of the perfect is an open question.

While the processes giving rise to forms like the pluperfect seem quite regular, there is a clear tendency for them to develop noncompositional semantic properties.

The perfect plays an important role in a number of different grammaticalization processes. Above, the sources from which perfects may arise were mentioned; in addition, the perfect is also the starting point or sometimes an intermediate point in different 'grammaticalization paths.' Most well-known is probably the development by which an original perfect develops into a general past tense, as in southern German, or sometimes rather a past perfective, as in spoken French. Intermediary stages of this development are common, as in many Germanic dialects. By another path, a perfect may develop into a recent or hodiernal past (e.g., in many Bantu languages). Last but not least, perfects often acquire inferential uses, which may lead to the development of categories with a basic modal or evidential meaning. This is common, for example, in the languages spoken around the Black Sea.

*See also:* Aspect; Tense.

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## Performative Clauses

K. Allan

This entry examines the characteristics of explicit performative clauses within the theory of speech acts. The discussion which follows is restricted to English performative clauses; but most of the characteristics identified are to be found in other languages, too.

A speech act is created when speaker/writer S makes an utterance U to hearer/reader H in context C. The S who utters (1) is using an explicit performative clause (underlined) to make a promise:

I promise to call Jo tomorrow. (1)

(For the sake of discussion assume all felicity conditions are satisfied. S could have made the same illocutionary point by uttering (2) in which the promise is not explicitly spelled out in the semantics of the verb:

I'll call Jo tomorrow. (2)

(1) uses an explicit performative clause whereas (2) does not.

Austin (1975: 57) notes that the legalistic-sounding adverb 'hereby' can be inserted into a performative clause, and will mark the verb as performative provided that 'hereby' is used with the meaning 'in uttering this performative.' Thus, (3) can be glossed as (4):

I hereby charge you with attempting to bribe a policeman. (3)

In uttering the words 'I charge you,'  
I charge you with attempting to bribe a policeman. (4)

## Performative Clauses

Contrast the explicitly performative (3) with the non-performative (5) in which 'hereby' means 'using this' and refers to something in the context, namely the bribe:

I could hereby charge you with attempting to bribe a policeman. (5)

In (3), where the illocutionary point is described explicitly in the performative clause, S actually charges H with attempting to bribe a policeman—such that H will subsequently have to appear before a court. But in (5), S only threatens to charge H with this offence; so the illocutionary point of (5) is a threat.

The presence of 'hereby' meaning 'in uttering this performative' is a sufficient, but not necessary, condition on an explicit performative clause. The following conditions C1–C6 are necessary characteristics of explicit performative clauses.

C1. The clause complies with the normal rules of English grammar.

C2. The main verb in the performative clause must be a performative verb which spells out the illocutionary point of U, cf. 'I charge you' in (3–4). Here is a short list of such verbs:

abjure, abolish, accept, acknowledge, acquit, admit, admonish, advise, affirm, agree to, announce, answer, apologize, ascribe, ask, assent, assert, assess, assume, authorize, baptize, beg, bet, bid, call upon, caution, charge, christen, claim, classify, command, commiserate, compliment, concur, congratulate, conjecture, convict, counsel, declare, declare out, delegate, demand, demur, deny, describe, diagnose, disagree, dispute, donate, dub, excuse, exempt, fire, forbid, give notice, grant, guarantee, guess, hire, hypothesize, identify, implore, inform, instruct, license, name, notify, offer, order, pardon, permit, plead, pray, predict, prohibit, promise, proscribe, query, question, rank, recommend, refuse, reject, renounce, report, request, require, rescind, resign, sanction, say, sentence, state, submit, suggest, summon, suppose, swear, tell, testify, thank, urge, volunteer, vouch for, warn, withdraw.

These verbs can be used as explicit performatives only when formal conditions C1–C6 are satisfied, otherwise the illocutionary point of U is not described by the meaning of the 'performative' verb and the so-called performative verb is used nonperformatively.

C3. The performative verb must be in the present (nonpast, nonfuture, nonperfect) tense, because the illocutionary act is defined on the moment of utterance.

Contrast performative (6) with nonperformative (7):

I promise to take Max to a movie tomorrow. (6)

I promised to take Max to a movie tomorrow. (7a)

I have promised to take Max to a movie tomorrow. (7b)

Saying 'I promise' in (6), S makes a promise; but the words 'I promised' and 'I have promised' in (7) do not constitute the making of a promise; instead, they

report that a promise was made. Thus the illocutionary point of (6) is a promise, whereas the illocutionary point of either utterance in (7) is to make an assertion or to inform H of a fact.

C4. A performative clause must be 'realis,' i.e., denote an actualization of the illocutionary act. Therefore (a) a performative verb can only co-occur with 'realis,' and not with 'irrealis' modal auxiliaries; and (b) a performative clause must be in the indicative mood. If Max says to his aged aunt:

I will hereby promise to visit you next time I'm in town. (8)

but then doesn't pay that visit next time he is in town, his aunt can justifiably chide him 'But you promised to visit!' thus accusing him of breaking his promise. This is because (8) denotes an ongoing act that can be glossed 'I will with these words make the promise to visit you next time I am in town.' In (8) the modal *will* is used in its root meaning 'willfully assist' and is *realis*, i.e., denotes an actual event, namely the illocutionary act described by the performative verb 'promise.' Contrast the performative promise of (8) with the predicted (even promised!) promise in:

Tomorrow when I see her, I will promise to visit next time I'm in town. (9)

'Hereby' cannot legitimately be inserted between 'will' and 'promise' in (9); which confirms that 'promise' is not a performative verb. In (9) the modal 'will' is used in its epistemic intentional sense and is 'irrealis' because it denotes an unactualized event, namely the future act of promising (to take place 'tomorrow').

The pattern established by 'will' holds generally for modal auxiliaries with performative verbs. Because by definition the performative actualizes an illocutionary act, the modal must be used in a sense which is *realis*, cf. the leave-taking in 'I must hereby take my leave of you'; the warning in 'Trespassers should hereby be warned that they will be prosecuted.' Example (10) is ambiguous:

I can hereby authorize you to act as our agent from this moment. (10)

If 'can' means 'have the power to' and 'hereby' means 'in uttering this performative,' then (10) effects an authorization (I have the power by the utterance of these words to authorize you ...). However, if 'I can hereby' means, e.g., 'using this telex from head-office enables me to,' then (10) is not performative and has the illocutionary point of a statement about S's ability to convey the authorization to H. Some additional examples of nonperformative verbs with modals are:

I might promise to visit you next time I'm in town. (11)

I might hereby authorize your release. (12)

I could hereby sentence you to ten years imprisonment. (13)



'Might' is never realis and it is obvious that (11) states the possibility that S will promise without actualizing a promise. The 'hereby' that occurs in (12) necessarily has the sense 'using this,' and refers to something in context other than the performative utterance, e.g., a confession from another party; thus (12) is non-performative. Similarly (13) does not pass sentence; compare it with 'I hereby sentence you to ten years imprisonment.' In (13) 'could' is epistemic and irrealis, and 'hereby' once again means 'using this.'

Explicit performatives occur only in the indicative mood; though they can take either emphatic stress or emphatic 'do.' For example, 'I do promise to come more often' makes an emphatic promise. Since commands and requests are themselves illocutions distinct from promises, there is no such thing as making an 'imperative promise,' or a 'requesting promise'; both are anomalous. An utterance of 'Promise to come and see me more often' would be an exhortation or plea that H make a promise; it cannot be used to (as it were) force S's promise onto H. 'Do I promise to leave soon?' is a rhetorical question about a promise; no promise is made in uttering this. And because no performative can be irrealis, none can occur in the subjunctive mood. 'If I should promise to leave early, will you come to the party with me?' does not make a promise.

C5. The subject of the performative clause is conditioned by the fact that the speaker S is agent for either him/herself or another, whichever takes responsibility for enforcing the illocution described by the performative verb.

More often than not this controls the form of the subject noun phrase. All the explicitly performative clauses instantiated so far have had a first person singular subject 'I'; but 'we' makes just as good a subject for a performative, e.g., it is 'we' who make the promise in 'We, the undersigned, promise to pay the balance of the amount within ten days'; and it is 'we' who make the authorization in 'We hereby authorize you to pay on our behalf a sum not exceeding \$500.' 'We' can be regarded as referring to joint speakers; but this is not strictly necessary, because a performative can be uttered on behalf of someone else by an authorized agent, as when an officer of the court says, 'The court permits you to stand down.' '[P]ermits' is performative because it is the issuing of this utterance which actually grants the permission. Austin (1975: 57) offers the following example with a second person subject: 'You are hereby authorized to pay ...' This is passive, and the authorization is made either by S him/herself, or by him/her on behalf of someone else; similarly: 'Notice is hereby given that trespassers will be prosecuted.' It is notable that when the subject of an explicit performative is not first person, the utterance is made by or on behalf of the person or persons or institution responsible for enforcing the illocution (promise,

authorization, granting of permission, giving notice, warning, etc.) described in the performative verb. Just the same responsibility, in fact, is attendant on the first person subject of an explicit performative clause. The person(s) responsible for the illocution is/are represented by the agent of the performative clause.

C6. It is often said that a performative verb necessarily occurs in the *simple aspect*; and it does normally do so, perhaps for the same reason that the simple aspect is normal in on-the-spot reporting of football matches, baseball games, etc. However, there are occasions where a performative may occur in the *progressive aspect*, cf. 'I am requesting you (for the umpteenth time) to tell me your decision.' This has the illocutionary point of a request: the grounds for claiming it to be a statement about a request are no stronger than the grounds for claiming the same about 'I request you (for the umpteenth time) to tell me your decision.' A felicitously uttered 'That horse has won its third race in a row, and I'm betting you \$10 it'll win on Saturday' has the illocutionary point of a bet, so H can justifiably reply, 'You're on!' thereby taking up the bet, and expecting S to pay up when s/he loses (or vice versa).

Explicit performatives can be negative, e.g., the illocutionary force of a refusal can be borne by either 'I refuse your request' or, less likely, by the negative performative:

I dōnt grānt  
/ your request./ (14)

In 'I don't promise to come to your party, but I'll try to make it' S performs an act of not-promising (note the scope of the negative: an act of not-promising is entirely different from an act of promising not to do something, cf. 'I promise not to come to your party'). The illocution of a negative performative is sometimes contrasted with another illocution, e.g., in 'I don't order you to get home early, but I hope you won't be too late.' Here, the illocution of not-ordering is contrasted with the exhortation expressed in the second clause.

The negative with a performative cannot be used to deny that an (any) illocutionary act has taken place; but it can be used to deny a particular illocution. For instance, the words in (14) uttered with appropriate prosody (a disjuncture after 'don't,' and a lower pitch level for 'grant your request') will render it a paraphrase of (15):

I don't [as you claim] 'grant your request.' (15)

I dōn't  
/ /grānt your request./ (16)

Examples (15–16) are not refusals, but statements about a refusal.

Because the negative performative describes an act of not-doing, the adverb 'hereby' meaning 'in uttering

this performative' must be placed before the negative, and not between it and the verb, cf. 'I do hereby not grant your request for more funds' and 'I hereby don't grant your request for more funds.' However, 'I don't hereby grant your request for more funds' does not make a refusal as such, but is instead a statement about a refusal, and is interpreted, 'I am not using this to grant your request for more funds' or 'I deny that I said or meant that "I hereby grant your request for more funds."'

To sum up the characteristics of explicit performative clauses: they must contain a verb that names the illocutionary point of the utterance; they must be in the present tense; in English they are typically in the simple aspect, but may be progressive; a performative

clause must be 'realis' and denote the actualization of the illocutionary act; S must be agent for whoever takes responsibility for enforcing the illocutionary point of the utterance. An explicit performative clause may be negative; it may be emphatic; and it may contain the adverb 'hereby' meaning 'in/by uttering this performative.'

*See also:* Moods, Clause Types, and Speech Acts; Indirect Speech Acts: Inferring the Illocutionary Point.

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## Phrastic, Neustic, Tropic: Hare's Trichotomy

K. Allan

The terms 'phrastic,' 'neustic,' and 'tropic' were introduced to the theory of speech acts by the philosopher Richard M. Hare. Hare (1949) had compared pairs like the imperative in (1) with the declarative in (2):

Keep to the path. (1)

You will keep to the path. (2)

He concluded that (1) and (2) have the same 'phrastic,' but a different 'neustic,' which he characterized as follows:

[Keeping to the path by you]<sub>phrastic</sub>[please]<sub>neustic</sub> (1a)

[Keeping to the path by you]<sub>phrastic</sub>[yes]<sub>neustic</sub> (2a)

It is tempting to symbolize neustic *please* by '!' and *yes* by '⊢,' but Hare (1970) justifies comparing (2) with (3) and (4):

You will keep to the path! (3)

Will you keep to the path! (?) (4)

Although (3) has the declarative form of (2), it has what Hare calls the same 'subscription' (= illocutionary point) as (1). Example (4) also has the same illocutionary point, but expressed in the interrogative form. Hare (1970) introduced a third operator, 'tropic,' to capture the mood of the utterance, here identified with the clause type (see *Moods, Clause Types, and Speech Acts*). One can now translate (1)–(4) as follows:

[Keeping to the path by you]<sub>phrastic</sub>['!tropic]<sub>neustic</sub> (1b)

[Keeping to the path by you]<sub>phrastic</sub>[⊢tropic]<sub>neustic</sub> (2b)

[Keeping to the path by you]<sub>phrastic</sub>[⊢tropic]<sub>neustic</sub> (3b)

[Keeping to the path by you]<sub>phrastic</sub>[?tropic]<sub>neustic</sub> (4b)

Defining these terms, Hare writes: 'I shall retain the term "*phrastic*" for the part of sentences which is governed by the tropic and is common to sentences with different tropics' (1970: 21); this is what Searle (1969) calls the 'propositional content' of the speech act. A 'neustic has to be present or understood before a sentence can be used to make an assertion or perform any other speech act' (1970: 22). Obviously, the inventory of neustics needs to be vastly increased beyond *please* and *yes* to include the extensive number of illocutionary points to which a speaker may subscribe. As can be seen from (1b)–(4b), sharing a phrastic and a tropic will not guarantee a common neustic; nor will the sharing of a phrastic and a neustic guarantee a common tropic. These three parts of a speech act are independent.

Hare (1970) uses the distinction between neustic and tropic to explain the fact that (5) makes an assertion about what time it is, but no such assertion is made by the identical sentence as it occurs in the protasis (*if*-clause) in (6), nor in the complement clause in (7).

It is ten o'clock. (5)

If it is ten o'clock, then Jane is in bed. (6)

Max says that it is ten o'clock. (7)

In each of (5)–(7), the clause *it is ten o'clock* has the same phrastic and the same tropic, but the neustic is a property of the whole speech act (see *Speech Acts and Grammar*).

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## Polarity Items

F. Zwarts

The term 'polarity item,' as applied to language, allows one to describe the behavior of certain words and phrases with respect to negation. One class of such expressions, usually referred to as the class of 'negative polarity items,' requires the presence of a negative element somewhere in the sentence. The other, known as the class of 'positive (or 'affirmative') polarity items,' excludes the presence of such elements.

### 1. Negative Polarity Items

The distributional patterns associated with negative polarity items clearly show that the presence of a negative element somewhere in the sentence is a necessary condition for the appearance of such expressions. As an illustration, consider the contrasting English examples in (1) and (2).

None of the children noticed anything (1)

\*Each of the children noticed anything (2)

The ungrammaticality of (2) makes it clear that the presence of the noun phrase *each of the children* is not sufficient to justify the occurrence of the polarity item *anything*. Apparently, it is only negative expressions such as *none of the children* that are capable of licensing the element in question. It must not be supposed that this is a peculiar feature of English. Similar patterns can be found in Dutch and German, as shown by the examples in (3)–(6).

#### Dutch

Niemand zal zulk een beproeving hoeven (3)  
 te doorstaan

*No one will such an ordeal need  
 to go through*

'No one need go through such an ordeal'

\*Iedereen zal zulk een beproeving hoeven (4)  
 te doorstaan

*Everyone will such an ordeal need  
 to go through*

\*'Everyone need go through such an ordeal'

#### German

Keiner wird solch eine Prüfung durchzustehen (5)  
 brauchen

*No one will such an ordeal to go through  
 need*

'No one need go through such an ordeal'

\*Jeder wird solch eine Prüfung durchzustehen (6)  
 brauchen

*Everyone will such an ordeal to go through  
 need*

\*'Everyone need go through such an ordeal'

Although the contrasts between these sentences may well seem perplexing at first, in the light of the distinction between monotone increasing and monotone decreasing expressions they admit only one explanation: the class of expressions which are capable of licensing the occurrence of negative polarity items is coextensive with the class of monotone decreasing expressions. This conclusion is corroborated by the contrasting examples in (7) and (8).

At most five of the children noticed anything (7)

\*At least five of the children noticed anything (8)

Of the two phrases *at most five of the children* and *at least five of the children*, it is only the first that can act as a licensing expression for the negative polarity item *anything*—a state of affairs which must be attributed to the circumstance that *at most five of the children* belongs to the class of monotone decreasing noun phrases, and *at least five of the children*, to the class of monotone increasing noun phrases.

Other expressions capable of licensing negative polarity items include the determiners *no* and *every*, the sentential connective *if*, and the preposition *without*. By way of example, consider the sentences in (9) and (10).

No child who suspects anything will consult someone (9)

Every child who suspects anything will tell someone (10)

## Polarity Items

The fact that the occurrence of the polarity item *anything* produces an acceptable result in both cases is due to the monotone decreasing nature of the determiners *no* and *every*. In the same way, the well-formed character of the examples in (11) and (12) can be accounted for.

If Lucy notices anything, she will warn us (11)

Joe left the house without saying anything (12)

Both the sentential connective *if* and the preposition *without* must be regarded as belonging to the class of downward monotonic expressions. This explains why the occurrence of *anything* in (11) and (12) does not lead to an ungrammatical sentence.

Transitive verbs are generally not capable of licensing negative polarity items, not even those transitive verbs that are 'intrinsically negative.' To illustrate this verbs such as *like* and its negative counterpart *dislike* may be considered. The next two sentences, both of which contain a direct object introduced by the negative polarity item *any*, are ungrammatical on a non-generic reading:

\*Simone liked any of his paintings (13a)

\*Jacob disliked any of her friends (13b)

However, when the occurrence of *disliked* in (13b) is replaced with the expression *didn't like*, which contains an overt negation, the result is fully acceptable:

Jacob didn't like any of her friends. (14)

Exceptionally, an intrinsically negative verb does license negative polarity items:

She lacks any charm (15a)

She does not have any charm. (15b)

No principled explanation of this deviant behavior is available to date.

The contrast between (13b) and (14) makes it clear that *dislike*, though usually considered to belong to the class of intrinsically negative expressions, is no more able to license the occurrence of negative polarity items than its alleged positive counterpart *like*. This is not to say that *dislike* can never be accompanied by a negative polarity item in object position. The next minimal pair shows that this is surely possible, provided the direct object in question is licensed by a monotone decreasing expression somewhere in the sentence.

\*Arthur disliked any of her friends. (16)

No one disliked any of her friends. (17)

Whereas the occurrence of the polarity phrase *any of her friends* produces an unacceptable result in (16), it can be seen that the corresponding constituent in (17) leads to a completely well-formed sentence, due to the

presence of the monotone decreasing noun phrase *no one*.

The failure of transitive verbs to trigger the occurrence of negative polarity items must be attributed to their homomorphic character. As such they form a subset of the class of monotone increasing expressions. Consequently, a transitive verb can no more act as a licensing element for negative polarity items than an upward monotonic noun phrase like *at least five of the children*.

## 2. Weak, Strong, and Superstrong Polarity Items

It turns out that negative polarity items can be either of the *weak*, or of the *strong*, type. In order to get a clear view of the content of this distinction, one does well to take the following Dutch and German examples into consideration.

### Dutch

Hoogstens één kind zal zich hoeven te verantwoorden (18)

*At most one child will himself need to justify*  
'At most one child need justify himself'

Niemand zal zulk een beproeving hoeven te doorstaan (19)

*No one will such an ordeal need to go through*  
'No one need go through such an ordeal'

\*Hoogstens zes kinderen hebben ook maar iets bemerkt (20)

*At most six children have anything noticed*  
'At most six children noticed anything'

Niemand heeft van de regenbui ook maar iets bemerkt (21)

*No one has of the rain anything noticed*  
'No one noticed anything of the rain'

### German

Höchstens eine Frau wird sich zu verantworten brauchen (22)

*At most one woman will herself to justify need*  
'At most one woman need justify herself'

Keiner wird solch eine Prüfung durchzustehen brauchen (23)

*No one will such an ordeal to go through need*  
'No one need go through such an ordeal'

\*Höchstens zehn Kinder haben auch nur irgendetwas bemerkt (24)

*At most ten children have anything noticed*  
'At most ten children noticed anything'

Keiner von diesen Leuten hat auch nur irgendetwas bemerkt (25)

*None of these people has anything noticed*  
'None of these people noticed anything'



The contrast between (18), (19), (22), and (23), on the one hand, and (20), (21), (24), and (25), on the other, makes it clear that expressions such as *ook maar iets* and *auch nur irgendetwas* place stronger restrictions on their environments than the negative polarity items *hoeven* and *brauchen*. As the ungrammatical sentences in (20) and (24) show, neither Dutch *ook maar iets* nor German *auch nur irgendetwas* is satisfied with the presence of a negative constituent of the form *at most n N*. Instead, both seem to require a more prominent negation such as *no one* or *none of these N*. As a matter of fact, the distinction between weak and strong forms of negative polarity appears to correspond with that between monotone decreasing and antiadditive expressions. Whereas Dutch *hoeven* and German *brauchen* are content with a monotone decreasing expression like *at most n N* as licensing element, *ook maar iets* and *auch nur irgendetwas* require the presence of an antiadditive expression like *no one* or *none of these N*.

By way of illustration a formulation of the laws which govern the occurrence of negative polarity items is given here:

#### Laws of negative polarity

Only sentences in which a monotone decreasing expression occurs, can contain a negative polarity item of the weak type. (26)

Only sentences in which an antiadditive expression occurs, can contain a negative polarity item of the strong type. (27)

According to the first law, the presence of a monotone decreasing expression is a necessary condition for the appearance of negative polarity items of the weak type. The second law, on the other hand, stipulates that negative polarity items of the strong type require the presence of an antiadditive expression as licensing element. To forestall any misunderstanding, it is noted that every antiadditive expression is also a monotone decreasing expression.

Besides the two types of negative polarity discussed so far, there exists a third type which will be referred to as 'superstrong' polarity. Elements belonging to this class include the English expression *a bit* and the Dutch adjective *mals*. As the ungrammatical examples in (28), (29), (31), and (32) show, such phrases are not content with the presence of a monotone decreasing or antiadditive constituent somewhere in the sentence.

#### English

\*Few people were a bit happy about these facts (28)

\*No linguist was a bit happy about these facts (29)

The men weren't a bit happy about these facts (30)

#### Dutch

\*Weinig van zijn oordelen waren mals (31)

Few of his opinions were tender

'Few of his opinions were soft'

\*Niet één van zijn oordelen was mals (32)  
Not one of his opinions was tender  
'Not one of his opinions was soft'

Zijn oordelen waren vaak niet mals (33)  
'His opinions were often not tender'

Instead, they require an antimorphic expression like *not* (Dutch: *niet*) as licensing element. That is to say:

#### Law of negative polarity

Only sentences in which an antimorphic expression occurs, can contain a negative polarity item of the superstrong type. (34)

According to this third law, the presence of an antimorphic expression is a necessary condition for the appearance of superstrong polarity items.

### 3. A Hierarchy of Negative Expressions

Although the distinction between monotone decreasing, antiadditive, and antimorphic expressions may not at first seem transparent, it finds its origins in the indisputable fact that noun phrases of the forms *no one*, *nothing*, *neither N*, *none of the N*, and *none of these N* embody a stronger type of negation than those of the forms *at most n N* and *few N*. This becomes apparent when one compares the logical behavior of the elements in question with that of the sentential prefix *it isn't the case that*, which belongs to the class of antimorphic expressions. By way of illustration, the biconditionals in (35) and (36) are considered.

It isn't the case that Jack ate or Jill ran ↔ (35)  
It isn't the case that Jack ate and it isn't the case that Jill ran

It isn't the case that Jack ate and Jill ran ↔ (36)  
It isn't the case that Jack ate or it isn't the case that Jill ran

One sees immediately that the equivalences in (35) and (36) must both be accepted as valid—a state of affairs which admits of no other explanation than that the operation in question is governed by the laws of De Morgan. This observation is important because it has frequently been argued that the logical patterns in (35) and (36) characterize the use of negation. Although such a conclusion is correct with respect to sentential negation and similar expressions of an antimorphic nature, it must be regarded as misleading when it comes to other forms of negation. Not only does natural language contain a variety of negative expressions, their logical behavior is also not the same. In order to make this fact convincing, the conditionals in (37)–(40) are considered.

Few trees will blossom or will die → (37)  
Few trees will blossom and few trees will die

Few trees will blossom and few trees will die ↗ (38)  
Few trees will blossom or will die

Few trees will blossom and will die ↗ (39)  
Few trees will blossom or few trees will die

## Polarity Items

Few trees will blossom or few trees will die → (40)  
 Few trees will blossom and will die

From these examples it is clear that the phrase *few trees*, though a negative expression, differs substantially from the antimorphic prefix *it isn't the case that*. Of the four conditionals presented above, only two are valid: the one in (37) and the one in (40). In other words, the logical behavior of noun phrases of the form *few N* is governed by one half of the first law of De Morgan and one half of the second law of De Morgan. In this regard, they are by no means alone, for it requires little reflection to realize that monotone decreasing noun phrases of the forms *at most n N*, *not all N*, *only a few N*, and *no more than n N* behave in much the same way. What this suggests is that such expressions embody a weak form of negation.

It turns out that there exists, in fact, a whole hierarchy of negative expressions. For not only are there phrases of the forms *few N* and *at most n N*, but antiadditive cases such as *no N*, *none of the N*, and *no one* are also found. The latter category differs from the former in that it expresses a stronger form of negation. The following conditionals provide a clear illustration.

No man escaped or got killed → (41)  
 No man escaped and no man got killed

No man escaped and no man got killed → (42)  
 No man escaped or got killed

No man escaped and got killed ↗ (43)  
 No man escaped or no man got killed

No man escaped or no man got killed → (44)  
 No man escaped and got killed

From these examples it may be concluded that the noun phrase *no man*, regarded as a negative expression, differs considerably from *few trees*. Of the four conditionals presented above, no less than three must be counted as valid: the one in (41), the one in (42), and the one in (44). What this means is that the logical behavior of noun phrases of the form *no N* is determined by the first law of De Morgan as a whole and one half of the second law of De Morgan. It should not be supposed that this is a mere accident, for it is easy to see that the property in question also holds for antiadditive noun phrases of the forms *none of the N*, *neither N*, and *no one*. The conclusion must therefore be that expressions of this type embody a stronger form of negation than monotone decreasing phrases like *few N* and *at most n N*, though not as strong as the type of negation expressed by antimorphic elements.

### 4. Scope and C-Command

Indissolubly connected with the phenomenon of polarity is the question of 'scope.' It is well known that a negative polarity item only produces an acceptable result if it occurs within the scope of a licensing expression. As an illustration of this rule the examples in (45) and (46) are considered.

Anyone who ever bought an ox, need never marry a woman (45)

\*Anyone who never bought an ox, need ever marry a woman (46)

Although the negative polarity verb *need* in both cases belongs to the main clause, the ungrammatical sentence (46) differs from (45) in that the negative adverb *never* is an element of the subordinate clause. For that reason, it is usually assumed that a negative polarity item only leads to an acceptable result if it is 'c-commanded' by the licensing expression.

### 5. Intervention Effects

One easily shows that this cannot be a sufficient condition. By way of demonstration, the following sentences are considered.

Few women met a man who liked anybody (47)

\*Few women met the man who liked anybody (48)

\*Few women met both men who liked anybody (49)

In all three cases, the negative polarity item *anybody* is c-commanded by the licensing expression *few women*. However, if the indefinite determiner *a* in (47) is replaced by the definite determiners *the* or *both*, the result is unacceptable, judging from the examples in (48) and (49). What this suggests is that the distribution of negative polarity items is not only determined by the position of the licensing expression, but to a large extent also by the nature of the intervening phrases. It should not be supposed that these patterns are purely accidental. In Dutch, for example, a similar contrast is found, both with regard to the weak polarity item *hoeven* and with regard to the strong polarity item *ook maar iets*, as shown by the sentences in (50)–(53).

Niemand kent een jongen die hard hoeft te werken (50)

No one knows a boy who hard needs to work

\*'No one knows a boy who need work hard'

\*Niemand kent de jongen die hard hoeft te werken (51)

No one knows the boy who hard needs to work

\*'No one knows the boy who need work hard'

Niemand kent een kind dat ook maar iets ondernomen heeft (52)

No one knows a child that anything undertaken has

'No one knows a child that has undertaken anything'

\*Niemand kent het kind dat ook maar iets ondernomen heeft (53)

No one knows the child that anything undertaken has

\*'No one knows the child that has undertaken anything'

As a matter of fact, the German cognate *auch nur irgendetwas* seems to be subject to comparable

restrictions, judging from the examples in (54) and (55).

Keiner kennt ein Kind, das auch nur  
irgendetwas versteht (54)

No one knows a child that anything  
understands

'No one knows a child that understands anything'

\*Keiner kennt das Kind, das auch nur  
irgendetwas versteht (55)

No one knows the child that anything  
understands

'No one knows the child that understands anything'

The existence of such intervention effects proves that the noun phrase *few women* in the sentence *Few women met a man who liked anybody* cannot possibly be regarded as the licensing expression. Instead, the sentence must be analyzed in such a way that the well-formed occurrence of the polarity item *anybody* can be attributed to the logical properties of the string *few women met a man who liked*. To this end use must be made of the mechanism of function composition shown in Fig. 1.

Few women met a man who liked anybody	
S/VP	VP/NP NP/N N/(N\N) (N\N)/VP VP/NP
S/NP	
S/N	
S/(N\N)	
S/VP	
S/NP	

Figure 1.

Such a way of portraying the matter is meaningful, because transitive verbs are usually homomorphic and hence monotone increasing in nature (but see (15) above). For this reason it is possible to analyze the compound expression *few women met* as the composition of a monotone decreasing expression (*few women*) and a monotone increasing expression. In view of the next theorem, this means that the whole expression *few women met* is monotone decreasing.

#### Theorem (56)

Let  $X, Y, Z$  be sets and let  $f: X \rightarrow Y$  and  $g: Y \rightarrow Z$ . Then:

- If  $f$  is monotone increasing and  $g$  is monotone decreasing, then the composition  $g \circ f$  is monotone decreasing.
- If  $f$  is monotone decreasing and  $g$  is monotone increasing, then the composition  $g \circ f$  is monotone decreasing.
- If  $f$  and  $g$  are both monotone increasing, then the composition  $g \circ f$  is monotone increasing.
- If  $f$  and  $g$  are both monotone decreasing, then the composition  $g \circ f$  is monotone increasing.

As a matter of fact, it is easy to show that, as a consequence of the upward monotonic nature of the determiner *a*, the common noun *man*, the relative pronoun *who*, and the transitive verb *liked*, the entire expression *few women met a man who liked* must be analyzed as monotone decreasing. In other words, the well-formed character of the sentence *Few women met a man who liked anybody* can be ascribed to the circumstance that the negative polarity item *anybody* is the argument of a monotone decreasing expression. The ungrammaticality of *\*Many women met a man who liked anybody*, on the other hand, is a consequence of the monotone increasing nature of the string *many women met a man who liked*.

In the same way it is easily proved that the well-formedness of the English sentence *No one knows a child that has undertaken anything* is a consequence of the antiadditive character of *no one* and the additivity of the transitive verb *know*, the determiner *a*, the common noun *child*, and the relative pronoun *that*. Indeed, using function composition it can be shown that the whole expression *no one knows a child that* is antiadditive in nature. More precisely:

#### Theorem (57)

Let  $X, Y, Z$  be sets and let  $f: X \rightarrow Y$  and  $g: Y \rightarrow Z$ . Then:

- If  $f$  and  $g$  are both additive, then the composition  $g \circ f$  is additive.
- If  $f$  is additive and  $g$  is antiadditive, then the composition  $g \circ f$  is antiadditive.

These facts help one to see the rationale of the contrast between the sentences *No one knows a child that has undertaken anything* and *\*No one knows the child that has undertaken anything*. One sees immediately that the string *no one knows a child that* consists of four additive expressions (*knows, a, child, that*) and one antiadditive expression (*no one*). This entails that the whole is antiadditive in nature, a state of affairs that is responsible for the well-formed occurrence of *anything*. The determiner *the*, on the other hand, lacks the relevant property of additivity. Consequently, the expression *no one knows the child that* cannot be regarded as antiadditive, which explains the ungrammatical character of the sentence *\*No one knows the child that has undertaken anything*.

### 6. Positive Polarity Items

The distributional patterns associated with positive polarity items are in many respects the opposite of those associated with negative polarity items. As an illustration, consider the contrasting English examples in (58) and (59).

Each of the children noticed something (58)

\*None of the children noticed something (59)

The ungrammaticality of (59) makes it clear that the presence of the negative noun phrase *none of the children* is sufficient to block the occurrence of the positive polarity item *something*. In view of the distinction between monotone increasing and monotone decreasing expressions, such contrasts admit only one explanation: the class of elements which block the occurrence of positive polarity items is coextensive with the class of monotone decreasing expressions.

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## Possession

J. R. Taylor

Like Agent, Cause, and State, Possession is a fundamental semantic-conceptual notion. It is ubiquitous in everyday life, and has extensive ramifications in syntax and morphology. We can understand possession in a narrow sense, as the ownership relation between a person and a thing (*John's car*). Linguistic evidence suggests that we need to understand possession rather more broadly, to comprise kinship relations (*my nephew*), whole-part relations (*the dog's tail*), the relation between a thing and an attribute (*my age*), the authorship relation (*Shakespeare's plays*), locative and temporal relations (*the city's inhabitants*, *the day's events*), the relation between a participant and an event (*the plane's departure*), and several more besides.

As suggested, the reason for bringing these (on the face of it) very different semantic relations together, is the similarity of the linguistic devices used to express them. Thus, the above-named relations can be expressed, in English, by means of a postnominal *of*-phrase (*the departure of the plane*), by a prenominal possessive involving the 'possessive apostrophe' (*the plane's departure*), or (in case the possessor is pronominalized) by a possessive form of a pronoun (*its departure*). In languages where nouns inflect for case, such as German or Russian, possessive relations can also be encoded by genitive case (*der Abflug des Flugzeuges*). Many of the relations also permit a wording with a 'possessive' verb, such as *have*. It must be borne

in mind, however, that the different wordings may not be equally appropriate in all cases. This fact points to the need to pursue research into possessives on two levels. On the one hand, one can look to generalizations within a language, and across languages. At the same time, there is the need to carefully examine the precise semantic value, and usage range, of each of the possessive constructions in any given language.

All languages, it seems, have the means to express possession relations. Moreover, in language after language, we find that possessive constructions encode much the same cluster of semantic relations (possession proper, kinship, whole-part, etc.). A good cross-linguistic survey is Seiler (1983). A more recent study, with focus on 'clausal' possessives, is Heine (1997). Taylor (1997) offers a detailed study of English 'possessive apostrophe' constructions.

### 1. Towards a Characterization of the Concept 'Possession'

'Possession', as a linguistic-semantic category, comprises a wide range of different relations. A first task is to enquire how it is that these disparate semantic relations can all fall under the rubric of 'possession'.

#### 1.1 The Prototype Approach

One way to bring the different relations together, is to identify a 'possession prototype'; other relations



are then assimilated to the possession concept as deviations from the prototype, or as metaphorical extensions of it.

We might consider possession in the narrow sense, i.e. a relation of ownership between a person and a thing, as the prototype. This is the relation encoded in children's first possessive expressions; its centrality is also suggested by the traditional term 'possessive'. Characteristics of prototypical possession include:

- (a) the possessor is human
- (b) the possessed is a thing
- (c) the possessor has privileged rights of access to the possessed
- (d) for any possessed, there is typically only one possessor
- (e) the possessed is usually in spatial proximity to the possessor
- (f) the possession relation is long-term
- (g) the relation was sanctioned by a legal transaction
- (h) the relation can only be terminated by a transfer-of-ownership transaction.

Deviations from this prototype can easily be imagined. Parts and attributes (*my hands*, *my age*) are not possessions in the strict sense, but they do exhibit features of the prototype (long-term duration, spatial proximity, only one possessor). This approach is taken in Taylor (1989). Alternatively, we might say that parts, attributes, and even kinsfolk, are understood as metaphorical possessions (Nikiforidou 1991).

A problem with these approaches, is that they fail to capture the intuition that kinship relations and part-whole relations are probably no less basic, linguistically and conceptually, than possession narrowly construed. Especially problematic are event possessives (*my departure*). Since event possessives have so little in common with prototypical possession, they would have to be considered as very marginal examples of possession. Yet such expressions are very widespread in the languages of the world. Moreover, it is not at all obvious what it would mean for an event to be metaphorically 'possessed' by a participant.

### 1.2 Possessors as Reference Points

A second approach is to search for a general, 'schematic' characterization of possession. Ownership, kinship, etc., would then have the status of specific instantiations of this more general notion.

Langacker (1993) and Taylor (1997) have argued that the schematic meaning of possession lies in the notion of a 'cognitive reference point'. A reference point provides access to entities located in its vicinity. Just as we locate an obscure side-street on a map by first finding a near-by prominent landmark, so we access a 'target' entity, by first identifying a 'reference point'. The possessor is the reference point, the possessed is the target. *John's car* designates a specific

car. In order to identify which one out of countless possible cars is intended, we first access a known individual, John; the intended referent is then 'located' (metaphorically speaking) in John's vicinity. Importantly, this account does not favour any particular kind of relation between reference point and target. *John's car* could indeed be the car that John owns. Equally, it could be the one he has rented, the stolen car he is driving, or—supposing John to be a car designer—the car that he designed. In fact, just about any pragmatically plausible relation could be invoked.

Many possessive expressions do not allow this variety of interpretations; *my nephew* can only express a kinship relation, *my departure* an event in which I participate. These facts fall out from the reference point account. *Nephew* designates a person in terms of their relatedness to another person. It is only natural that this other person should serve as a reference point for the identification of the nephew. *Departure* designates an event involving a participant. Again, the participant is a natural reference point for identifying the event.

The reference point account neatly explains why possessives are normally not reversible. We have *the cat's tail*, but not *the tail's cat*. A cat can be a reference point for a tail, but it would be odd for a tail to be a reference point for an animal of which it is a part.

## 2. Linguistic Resources for the Expression of Possession Relations

We can distinguish two broad ways of expressing a possession relation: by means of a verbal (or clausal) expression, or by means of an adnominal expression.

### 2.1 Verbal (Clausal) Possessives

Clausal possessives have the schematic form [Possessor-X-Possessed], where [X] is a verbal element. Examples from English includes expressions with *have*, *possess*, *own*, etc. Clausal possessives designate the possessive relation as such; since the verbal element may bear markers of tense, aspect, and polarity, the possession relation is located in time and reality. In addition to verbs which express possession as such, there are a large number of verbs which designate transfer of possession: *buy*, *obtain*, *bequeath*, *sell*, *give*, and many more.

Of the English possessive verbs, *have* is clearly the most general in meaning. *Have* is thought to be cognate with Latin *capere* 'grasp'. The modern English verb thus generalizes from what once was a much more concrete sense. Heine (1997) offers a cross-linguistic survey of clausal possessives, focusing on their origins in more concrete schemas. Amongst the schemas that Heine identifies are the accompaniment schema, and the location schema. In Swahili, 'he has two wives' is expressed by means of the accompaniment morpheme *na* 'with': *Ana wake wawili*, lit. 'he

## Possession

(is) with two wives'. Russian has the location schema: *U Pëti est' mashina*, lit. 'at Pete (is) (a) car'.

### 2.2 Adnominal Possessives

Adnominal possessives designate, not the possession relation as such, but the possessed, which is characterized in terms of its relation to the possessor. Whereas *I have a car* designates the relation between me and the car, *my car* designates the car.

Languages have a variety of means to express adnominal possession. Malay makes do with simple concatenation: *buku saya* 'my book', lit. 'book I'. French uses prepositional phrases headed by *de* (comparable to English *of*), or occasionally *à*. In case languages, the possessor nominal may inflect for genitive case: Latin *amor dei* 'love of god', where *dei* 'God' inflects for genitive case. These resources are not specialized for possession, but have uses elsewhere in the language. The German genitive can be used in adverbials of time (*eines Tages* 'one day'), a use which has nothing to do with possession. English, of course, does have a distinctive possessive device, the prenominal construction involving the possessive apostrophe (*the man's hat*).

Even though a language may have a palette of resources to express possession, these are not necessarily synonymous. In English, the prenominal apostrophe construction, and the postnominal *of*-construction, are not at all equivalent. *My car* does not tolerate an *of*-wording: *the car of me* is simply ungrammatical. One might suppose that this is because the *of*-construction requires a 'heavy' NP complement: *the car of the people who live next door* is noticeably better than *the car of them*. But this cannot be the only reason. *A photograph of me* is perfectly acceptable; moreover, this expression has a more restricted interpretation than *my photograph*. (*My photograph* could be a photograph that I own, or took; *a photograph of me* has to be a photograph that represents me.) *Of* tends to invoke the relational status of the possessed noun: a photograph is necessarily a photograph *of* someone or something. *Car* is a non-relational noun; hence the oddity of *the car of me*.

### 2.3 Pronominal Possessors

Although French encodes adnominal possessors by means of the general purpose preposition *de*, there are distinctive forms for when the possessor is expressed by a pronoun. Compare *le livre de Pierre* 'Pierre's book' and *son livre* 'his book'. Many languages have such forms.

Often, these pronoun-based forms distribute like determiners. French *son livre* is in paradigmatic contrast with *le livre* 'the book'. Such forms are appropriately called possessive determiners. Semantically, possessive determiners confer definiteness. In Italian, however, the pronoun-based forms can

co-occur with determiners, and are therefore analogous to adjectives: *il libro, il suo libro*. Possessive adjectives do not automatically confer definiteness. In fact, Italian possessive adjectives can co-occur with an indefinite article: *un suo libro* 'a book of his'.

### 3. Possessive 's

The English possessive morpheme 's is thought to be a reflex of an Old English genitive inflection. Another theory—largely discredited—is that it is a phonological reduction of *his*, as in *the king his daughter* (a common form in the 15th and 16th centuries). If the possessor noun is a plural ending in 's', the apostrophe is a purely orthographic device (*the kings' daughters*); this usage was fixed only comparatively recently. With singular possessors ending in 's', usage is not completely standardized even today (*Dickens' novels* vs. *Dickens's novels*).

If the English possessive morpheme descended from a genitive inflection, in the modern language it is certainly not a case marker. Case inflections attach to nouns, whereas 's attaches to the end of a noun phrase. In *the people I was talking about's new car*, it would be absurd to claim that *about* inflects for genitive case. Another argument against the genitive case account is that a form in 's can often be used pronominally: *My car is old, but my brother's is new*. Here, *my brother's* has pronominal force (it is equivalent to 'my brother's one'). A nominal marked for genitive case (such as German *meines Bruders*) cannot be used in this way, i.e. to refer to something that is 'my brother's'.

Another approach has been to regard possessive 's as a kind of preposition (more precisely, a postposition). Superficially, *the daughter of the king* and *the king's daughter* are mirror images of each other. In the one expression, *of* is a preposition, which precedes its complement; in the other, 's is a postposition, which follows its complement. The trouble with this analysis, is that *the king's daughter* has definite reference. Definiteness, however, is not conferred by *the*, since *the* is construed with *king*, not with *daughter*. It is the prenominal expression *the king's* which, as a whole, confers definiteness. The most reasonable account is that the prenominal expression (*the king's*) is itself the determiner.

### 4. Other Possessive Constructions

There are a number of minor possessive constructions. Possessives can be used attributively (*This photograph is John's*), also as pro-forms designating the possessed: *His friends and hers*. (Note also *go to the doctor's*, i.e. 'the doctor's surgery'.) These uses are subject to some severe semantic restrictions. *The photograph is John's* invokes ownership; it cannot mean that the photograph depicts John.

Especially puzzling are 'postnominal possessives',

of the kind *a friend of John's*. This construction has been around in English for many centuries, cf. the opening lines of *Antony and Cleopatra*: 'Nay, but this dotage of our general's / o'erflows the measure'. Some have argued that this is essentially a partitive construction: *a friend of John's* is a friend taken from the set of John's friends. Against this, there are uses where a partitive account is unworkable—that *husband of hers* does not imply that she has more than one husband! (The same goes for the Shakespearean example).

### 5. The Role of Discourse Context

*The city's inhabitants* and *the inhabitants of the city* appear to be conceptually synonymous. What determines the choice of the one expression over the other?

The reference point analysis supplies an answer. If the prenominal possessor (*the city*, in *the city's inhabitants*) is indeed a reference point, which serves to access the possessed ('the inhabitants'), then it is only reasonable that the reference point should be more accessible than the target; otherwise, there would be no rationale for the use of the prenominal construction. The prenominal construction will be preferred, then, just in case the possessor is more accessible than the possessed. Accessibility can be measured by such parameters as topicality, givenness, recency of previous mention, definiteness, and the like. Text-based analyses overwhelmingly confirm this prediction.

### 6. Alienable and Inalienable Possession

One can distinguish between 'possessions' (broadly construed) which are 'inherent' to the possessor, and possessions which are contingent on circumstances. My head is an inalienable part of my body. Wherever I go, there goes my head. Alienable possessions are things that are only circumstantially mine; they can be taken away, without my integrity as a person being affected.

The distinction has grammatical ramifications. Compare *He hit me on the head* with \**He hit me on the car*. The former means, roughly, 'he hit my head'. The possessor ('I') has been extracted from the possessive *my head*, to become the direct object of *hit*, while *head* is demoted to an oblique phrase. The phenomenon is sometimes called possessor raising. The conceptual rationale for possessor raising is quite transparent. If someone hits my head, they also hit me! But if they hit my car, they do not thereby hit me. In some languages, possessor raising is more widespread than in English. In Zulu, 'he extracted the boy's tooth' is rendered as *Ukhipe umfana izinyo*, lit. 'he extracted the boy the tooth', where 'the boy' is the direct object of the verb; in extracting the tooth, the dentist thereby treats the boy. Use of possessive morphology—*Ukhipe izinyo zomfana*, lit. 'he extracted the tooth of the boy'—would have the bizarre meaning,

that the boy's tooth was extracted from someplace other than the boy's mouth!

### 7. Possessives and Compounds

In many languages, possessives exhibit a relation of family resemblance to nominal compounds. Some languages do not even mark the difference, e.g. Malay *rumah saya* 'my house' (lit. 'house I'), *rumah batu* 'stone house' (lit. 'house stone'). The contrast becomes blurred in English, too, especially when the possessor is indefinite or generic. A *driver's licence* is a kind of licence; notwithstanding the possessive morphology, the expression is analogous to nominal compounds of the kind *apple pie* (which designates a kind of pie).

The fudging of the contrast between possessives and compounds probably contributes to the widespread confusion, amongst users of English, about the use of the possessive apostrophe. Do we write *students' union* or *students union*? The former is marked as a possessive, the latter as a compound. Yet there is not much to distinguish the two readings semantically (and phonologically, they are, of course, identical).

### 8. Possessives in Nominalizations

It is a remarkable fact, that when a clause is nominalized, the nominal participants in the clausal relation tend to be encoded as possessors. In the clause *The enemy destroyed the city*, the participants in the destroying event are the Agent (*the enemy*) and the Patient (*the city*). The clause may be nominalized by replacing the verb *destroy* with the noun *destruction*. But if we still wish to express the Agent and the Patient, these are encoded as possessors, while the event is construed as the possessed: *the enemy's destruction of the city*. We even get a passive nominalization: *The city was destroyed by the enemy* → *the city's destruction by the enemy*. A similar situation holds with *-ing* nominalizations: *the enemy's destroying (of) the city, without my saying a word*. Koptjevskaja-Tamm (1993) gives a cross-linguistic survey of possessives in nominalizations.

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## Prepositions and Prepositional Phrases

E. Jaworska

'People seem never to have taken prepositions seriously. [T]hey deny that the category "preposition" has any real intrinsic syntactic interest other than as an annoying little surface peculiarity.' These words, from Jackendoff (1973: 345), reflect the attitude towards this word class prevailing in the early generative grammar literature and stemming from the view of prepositions in traditional grammar as appendages to nouns or pronouns. Many linguists have since responded to Jackendoff's challenge and 'taken prepositions seriously.' Specifically, thanks to the insights of the X-bar theory of syntactic categories, it has emerged that, in general, prepositions merit the status of a major lexical category on a par with verbs, nouns, and adjectives. Work within major theoretical frameworks, in particular the Government and Binding framework (GB), has revealed that the syntax of prepositions and prepositional phrases is an interesting and a respectable area of study. It is likely that the main tenets of this 'new thinking' about prepositions and prepositional phrases will establish themselves with the more traditional grammarians.

### 1. The Terminology

The term 'preposition,' applied to such English words as *to*, *for*, *from*, and *about*, suggests that words belonging to this class must combine with some following expression to form a phrase. This is not so and the term should not be taken literally on at least two counts. First, in languages like Japanese, Turkish, and Hindi lexical items with the characteristics of prepositions appear regularly after the associated element. The following illustrate (1):

Tokyo e 'to Tokyo' Japanese (1a)

Ahmet için 'for Ahmet' Turkish (1b)

Ram ko 'to Ram' Hindi (1c)

(from Lyons 1969: 302-3)

Although they are often called 'postpositions,' they are best viewed as a subclass within the category preposition, perhaps more appropriately relabeled 'adposition.' An often-quoted example of a postposition in English, which is predominantly a prepositional language, is *ago* as in *two days ago*. Second, words like *before* in *He had been there before* are also best viewed as a kind of preposition even though they do not precede or follow anything with which they form a phrase. They constitute a subcategory of 'intransitive' prepositions (see Sect. 2.1 below).

The preposition is often described as an 'uninflected' or 'invariable' part of speech but there are languages whose prepositions do not conform to this

description. In Welsh, Irish, and Breton, for example, prepositions are inflected to agree with a pronominal complement. Thus, the form of the preposition depends on the form of the accompanying pronoun. The following (2) is a paradigm from Welsh for the preposition *ar* 'on':

Singular		Plural	
arnaf fi	'on me'	arnom ni	'on us' (2a)
arnat ti	'on you'	arnoch chwi	'on you' (2b)
arno ef	'on him'	arnynt hwy	'on them' (2c)
arni hi	'on her'		

It has also been argued that Italian, German, and French have inflected prepositions. For Italian, Napoli and Nevis argue that what look like combinations of preposition and article are in fact prepositions inflected for number and gender. In the following example (3), the preposition bears the feminine (FEM) singular (SG) ending:

Sta nella terza camera (3a)  
is ill-the(FEM. SG) third bedroom  
'It's in the third bedroom.'

\*Sta in la terza camera (3b)  
(from Napoli and Nevis 1987: 105)

Similar phenomena occur in German (Hinrichs 1986) and French (Zwicky 1987).

It is quite clear, then, that prepositions do not necessarily combine with a following expression and that they are not necessarily morphologically invariable.

Another traditional misconception about prepositions is that nouns and pronouns are the only categories that prepositions can combine with (or 'govern,' or 'be complemented by'). First of all, it is more appropriate to say that they can be complemented by noun phrases (NPs), which usually subsumes unmodified, bare nouns and pronouns as well as more complex expressions such as in *to the smiling baby*, where a noun is combined with an adjective and a determiner. Second, NP is not the only category that can complement prepositions. Both these points will be developed in the next section.

While the term and the traditional definitions of 'preposition' should clearly not be taken literally, the term 'prepositional phrase' is to be taken literally. Just as NPs are phrases headed by nouns, verb phrases (VPs) are phrases headed by verbs, and adjective phrases (APs) are phrases headed by adjectives, so prepositional phrases (PPs) are phrases headed by a preposition.



## 2. The Structure of Prepositional Phrases (PPs)

### 2.1 Complements

Theoretical and empirical considerations have led various linguists to acknowledge that prepositions can take as their complement not only an NP but also a PP and a clause (S bar, or S'), or no complement at all. Otto Jespersen (1924) was probably the first who made this point, to be followed in modern linguistic theory some forty years later in Klima (1965), and more fully in Edmonds (1972, 1985) and Jackendoff (1973, 1977).

Jespersen sought to establish a greater regularity in the system of parts of speech by drawing parallels between verbs and lexical items like *on*, *in*, *since*, *before*, etc. He suggested that just as certain verbs could take an NP, a PP, an S', or no complement (0), for example (4):

Anna believes [NP the stories] (4a)

Anna believes [PP in ghosts] (4b)

Anna believes [S' that the stories about ghosts are true] (4c)

Anna believes 0, which gives her a lot of strength (4d)

so should certain prepositions be viewed in this way given that they too could appear with a range of complements (5):

Adam was in [NP the house] that day (5a)

Adam has been living here since [PP before the war] (5b)

Adam has been living here since [S' the war ended] (5c)

Adam was in 0 that day (5d)

What seems to be tacitly assumed in Jespersen's argument has been made explicit by Edmonds and Jackendoff. This is that the morphological identity and semantic similarity of words like *in*, *since*, etc. in various contexts as exemplified in (5) above suggests that one might be missing a generalization by placing such words in separate word classes distinguished by what complement they take.

This approach is, in fact, characteristic of 'traditional' grammar, much of which is enshrined in the major contemporary reference work on English grammar, Quirk, et al. (1985), and its derivatives. According to this approach, items like *since* and *before* are only prepositions when taking as a complement an NP or a PP, but they are 'subordinators' (i.e., subordinating conjunctions or 'complementizers') when combined with a clause, and 'prepositional adverbs' when standing alone. Clearly, Quirk, et al. are ready to admit that prepositions can combine not only with NPs but also with PPs. However, they appear reluctant to admit that prepositions can take clausal complements. Nevertheless in sentences like *They disagreed about when the train was due* they analyze the preposition *about* as followed by a clausal

complement. Thus, in principle, Quirk, et al. could analyze sequences like *until the war ended* as a case of clausal complementation of a preposition.

Quirk, et al.'s classification of complement-less *since*, etc. as prepositional adverbs is not well-justified either. It seems that the only reason for this classification is the fact that such items can appear in one of the main positions in which adverbs can appear, namely, in the adverbial position. It is easy to see, however, that as time adverbials, these items can alternate not only with prototypical *-ly* adverbs but also with 'ordinary,' straightforward PPs, and, indeed, NPs (6):

Adam has lived here	{	before	(6)
		late	
		since the end of the war	
		all his life	

Thus, one cannot assign *before*, etc. to a particular word class solely on the basis of the occurrence in the adverbial position.

There are a number of empirical arguments for analyzing certain prepositions as admitting a range of complements (including none) rather like certain verbs. Specifically, there is good evidence that *in*, *on*, *since*, *before*, etc. are prepositions when combined with no complement at all or with a clause. The most often quoted arguments for this position involve the occurrence of the intensifier *right* and clefting.

Following Klima (1965), Edmonds (1972) notes that *right* is a specifier typically accompanying PPs and no other category. Thus, when it modifies a prepositional-like element without a complement, then that element is a preposition (7).

The baby walked *right to the end of the drive* (7a)

The baby was *right inside the box* (7b)

The baby was *right inside* (7c)

Given that *right* can co-occur with such directional and temporal items as *downstairs*, *afterwards*, *away*, and *beforehand*, which are adverbs in traditional grammar, it has been argued (e.g., Edmonds 1972, 1987; Jackendoff, 1973) that they be analyzed as (intransitive) prepositions also.

Some members of the traditional category of 'subordinator' or 'subordinating conjunction' (roughly corresponding to complementizer in generative grammar) have also been reanalyzed as prepositions. First, it has been noted that the intensifier *right* can be associated with clausal constructions introduced by *before*, *since*, etc., for example, (8):

He spoke *right after the music stopped* (8)

Since *right* is a prepositional specifier elsewhere, in this context too it is regarded as modifying a PP. Hence, *before*, etc. are prepositions when introducing a clause.

## Prepositions and Prepositional Phrases

Clefting constructions provide further evidence for such an analysis. These usually involve an NP or a straight-forward PP in the focus position, as exemplified in (9).

It was [NP the baby] that was in the box (9a)

It was [PP in the box] that the baby was (9b)

Clauses introduced by *before*, *after*, etc. can appear there also (10):

It was [after the music stopped] that he spoke (10)

The natural conclusion from these data is that clause-introducing preposition-like elements are indeed prepositions.

In his theory of syntactic categories, Emonds (1985, 1987) extends the notion preposition to include all subordinating conjunctions, not just those that look or behave like prepositions but also items like *that*, *because*, and *while*. Moreover, Emonds (1987: 32–33) presents the case for classifying the traditional ‘sentence connectives’ like *moreover*, *however*, and *nevertheless* as intransitive prepositions.

Given the analysis within which *since*, *after*, etc. are prepositions taking clausal complements and the fact that sentences like \**Adam has been living here until that the war ended* are unacceptable (at least in Standard English), one might suppose that clausal complements of prepositions never contain an overt clause introducer (complementizer). Constructions like *in order that S*, *in that S*, and *except that S* are relevant to this point. Although Quirk, et al. assert (1985: 998) that they involve complex subordinators *in order that*, *in that*, and *except that*, respectively, there is evidence to the contrary, suggesting that the P–S’ structure is involved in all three cases with the clause introduced by an overt *that*. For example, *in order* and *that* can be separated by additional lexical material (11):

*In order, however, that* the matter be dealt with satisfactorily, we must call a full meeting (11)

which argues that this sequence is not a single lexical item and that there is a constituent boundary in this particular position. Furthermore, *in order* can be followed not only by a finite *that*-clause but also by a non finite *for*-to clause (12):

*In order for the definitions to yield the desired results*, we have to interpret these words in the light of our knowledge of what is being defined. (12)

A generalization would be missed if *in order* in both cases were not treated in the same way. On the basis of these data, the most plausible thing to say here is that *in* and *order* are a complex preposition *in order* which takes a (full) clausal complement, finite or nonfinite. Similar arguments can be constructed in connection with the other sequences mentioned above to the effect that *in* and *except* are prepositions that can take a *that*-clause complement.

While P–P–NP strings like *since after the war* are instances of a preposition taking a PP as its complement, not all P–P–NP strings are like this. Specifically, in sequences like *out-of-NP*, sometimes cited as an example of the P–PP structure (cf. Jackendoff 1973: 348–50; Radford 1988: 364), one is dealing with a complex preposition *out of*. Among the arguments for this position is one based on separability; it involves coordination. As is illustrated in (13), it is impossible to conjoin *of NP* with another *of NP* following *out*, thus separating *of* from *out*.

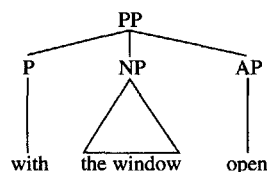
\*The nine black riders appeared out [of the barn] and [of the castle] (13)

Example (14) shows that in the more plausible cases of the P–PP structure, coordination of PP complements of a preposition is possible.

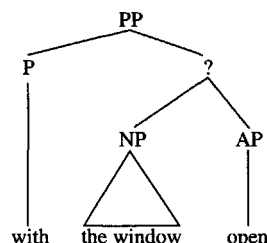
The troops advanced from [beside the river] and [within the forest] (14)

It is fairly clear, then, that *out of* constitutes a single word. Needless to say, the most natural classification for it is preposition.

A final point about prepositional complementation concerns the so-called ‘absolute’ PPs, phrases containing subject–predicate sequences as in *with the window open* and *without a hat on your head*. These have been analyzed either as involving two separate complements of the preposition or just one—a ‘small clause.’ Van Riemsdijk (1978: ch. 3) is an advocate of the former analysis. For him an absolute PP like *with the window open* has the following structure (15):



For others, most notably Hoekstra (1984: ch. 4), and also Jespersen (1940), the subject and the predicate form a single clausal complement of the preposition. Example (16) illustrates the small clause alternative.



The question mark in place of a category label for the constituent at issue marks the fact that there is no agreement as to the category status of this

constituent: it could be an S', a bare S, or an AP (or any other phrasal category, depending on the category of the predicate of the small clause, cf. *with all our students* [NP *hostages*] or *without the baby* [VP *demanding attention*]).

## 2.2 Specifiers

It follows from Sect. 2.1 that as far as complementation is concerned, prepositions and prepositional phrases merit the status of major categories. This status is confirmed and emphasized by the fact that just like other fully fledged phrases, PPs also allow specifiers. In Sect. 2.1 above, the intensifier *right* was mentioned in sentences like *The baby walked right inside the box*. *Right*, however, is only one of a range of types of prepositional specifier, the others being degree phrases like *twenty yards* in (17):

They walked [*twenty yards* into the tunnel] (17)

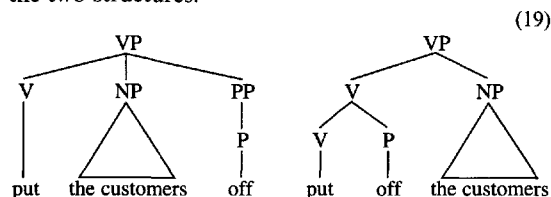
and PPs like *down* in (18):

They disappeared [*down* into the darkness] (18)

The discussion in this section highlights the fact that prepositions are generally heads of phrases, prepositional phrases, and that these show the characteristics of major phrasal categories. The similarities and differences between prepositions and prepositional phrases, and other lexical and phrasal categories is the subject of Sect. 6 below. It is worth noting here that prepositions are heads of phrases not only in a language like English, where they are regarded as playing a special role in the absence of a rich declensional system but also in Polish (Jaworska 1988), with quite an elaborate case system.

## 3. Prepositions as Non-heads

There are a number of situations in which prepositions are not heads of phrases even in approaches which assume that they generally are heads. In English, at least three such situations arise. One, summarized in Radford (1988: ch. 2) has to do with prepositions in the so-called 'verb-particle' alternations such as *He put off the customers* versus *He put the customers off*. A variety of syntactic tests point to the conclusion that where the intransitive preposition (traditionally referred to as 'particle') and the verb are not adjacent, the preposition is the head of a PP. However, when the intransitive preposition is adjacent to the verb, it constitutes part of a complex verb, *put off* in the present example. Example (19) illustrates the two structures.



The second situation in which English prepositions are not heads involves nominal complements introduced by *of* as in *the destruction of Rome*. This issue has been discussed in the government and binding framework in connection with Case Theory (see Case). Two proposals have been put forward. One, in Chomsky (1981: 49–51), is that the preposition is a transformationally introduced 'case assigner.' The other in Chomsky (1985: 193–94), is that it is a realization of oblique case. One advantage of saying that *of* is transformationally introduced is that it enables one to say that nominals like *destruction* have the same subcategorization properties as the related verbs, such as *destroy*. Another advantage is that it enables one to say that certain other NPs, such as *Rome's destruction*, have the same underlying structure as (*the*) *destruction of Rome*.

The third situation in which prepositions are not heads occurs in the so-called 'dative' (or 'double object') constructions, discussed by Baker (1988: ch. 5) under the heading 'preposition incorporation.' This involves adjunction to a verb of a preposition which heads a complement of the verb. The preposition is realized as an affix. As has often been pointed out in the literature, various non-European languages freely display the phenomenon. In one of Baker's examples, from Chichewa (1988: 229), cited below (20), *kwa* is the preposition associated with the indirect object:

Mbidzi zi-na-perek-a msampha *kwa* (20)  
 nkhandwe  
 zebras SP-PAST-hand-ASP trap to  
 fox  
 'The zebras handed the trap to the fox'

In the dative counterpart of this sentence in (21) below, the element *-er-* within the verb is the incorporated preposition.

Mbidzi zi-na-perek-er-a nkhandwe (21)  
 msampha  
 zebras SP-PAST-hand-to-ASP fox  
 trap  
 'The zebras handed the fox the trap'

Various theoretical considerations lead Baker (pp. 233–34) to suggest that preposition incorporation also occurs in English. According to this analysis, sentences like *I handed the teacher my exam* are derived by movement of *to* from the usual position immediately before the indirect object (cf. *I handed my exam to the teacher*) to be adjoined to the verb. Unlike in Chichewa and many other languages, an incorporated preposition in English is invisible.

Yet another example of prepositions appearing as non-heads—with no equivalent in English—occurs in Polish. As the following sentence illustrates, a preposition and the adjacent specifier from the complement NP can appear separated from the rest of the NP. In other words, a single PP can appear in two parts in a sentence, as in (22).

## Prepositions and Prepositional Phrases

- Z *piękną* Adam *ożenił się* *kobietą* (22)  
with beautiful Adam married REFL woman  
'Adam married a beautiful woman.'

As discussed in Borsley and Jaworska (1988), the preposition in such constructions is the head of a PP in the underlying structure but it is optionally adjoined to the following word—e.g., a determiner or an adjective—thus losing its head status. Subsequently, any movement transformation affecting the specifier will also affect the preposition.

A feature common to this and the preposition incorporation case is that the prepositions are non-heads in surface structure. In both cases they are heads in the underlying structure.

### 4. The Distribution of PPs

There are a wide range of positions in a sentence in which PPs can appear. Most commonly, they appear as complements, adjuncts and predicates. Other types of phrase can appear in these positions also.

PP complements of nouns, verbs, adjectives and prepositions are illustrated by the following examples (23):

- Adam remembers [NP their argument *about the photographs*] (23a)  
Anna [VP decided *on Bangor*] (23b)  
They were [AP surprised *at the suggestion*] (23c)  
The baby crawled [PP from *inside the box*] (23d)

PPs as NP, VP, AP and PP adjuncts (or modifiers) are illustrated in (24), respectively.

- Adam remembers [NP their argument *before supper*] (24a)  
Anna [VP decided *during a walk*] (24b)  
They were [AP pleased with themselves *in many ways*] (24c)  
This book is [PP up to date *in every way*] (24d)

VP adjuncts are commonly known as 'adverbials.' One of the central questions in grammatical analysis is whether a suitable expression is an argument or an adjunct. Devising tests distinguishing between these two functions has been an important concern of syntacticians (see Radford 1988: chs. 4 and 5).

Finally, (25) contains examples of PPs functioning as predicates.

- She is *in trouble* (25a)  
The lecture was *on Monday* (25b)  
I want this sailor *off the ship* (25c)

While in examples (25a and b) the relation between the subject and the predicate appears to be mediated by a form of the verb *be*, in example (25c), there is no verb to relate the subject, *this sailor*, and the predicate, *off the ship*. This type of construction is often referred to as a 'small clause' although—as was indicated in

Sect. 2.1 above in connection with absolute *with(out)*-phrases—there is an ongoing debate as to whether or not such verbless subject–predicate sequences form a constituent.

The small clause theory can be extended to verbal constructions like (25a and b) above. It has been suggested by Stowell (1981) that the subject and the predicate originate in the complement of the verb *be* and that the subject is subsequently raised to its surface position. Following Stowell (1981), the underlying structure for (25a) would be as sketched out in (26). (*e* marks the empty subject position and SC stands for small clause thus avoiding the question of its grammatical category label.)

- e* [VP *be* [SC she *in trouble*]] (26)

Yet another position in which PPs can appear is subject and object of a sentence. Examples (27) and (28) illustrate these positions:

- Between six and seven* suits her fine (27a)  
*Across the road* appeared to be swarming with bees (27b)  
The campaigners planned *until Christmas* in detail (28a)  
The new tenants are reclaiming *behind the garage* (28b)

While NPs are typically associated with these positions, the occurrence of PPs (as well as other phrasal categories, including clauses) has important theoretical implications. The nature and the significance of the phenomenon in the context of GB is discussed in Jaworska (1986).

One notable consequence of the recognition of subject and object PPs (and PP complements of prepositions) concerns the status of the Case Resistance Principle (CRP) established by Stowell (1981) within the GB framework. According to the CRP, constituents headed by lexical categories that can assign case cannot appear in positions to which case is assigned. Because prepositions are case assigners and because subject, object, and object of a preposition are the positions to which case is assigned, PPs—according to the CPR—are excluded from them.

### 5. Restrictions on Preposition Stranding

Another major issue in the syntax of prepositions and prepositional phrases is restrictions on preposition 'stranding.' The examples in (29) below illustrate this phenomenon.

- It was *this student* that Adam talked [PP to *t*] yesterday. (29a)  
*Which books* did you ask [PP for *t*]? (29b)

In such constructions, the prepositional complement appears in a noncanonical position in the sentence, its usual position occupied by an empty category (*a trace*).



English is a language in which preposition stranding can occur quite freely. In most other languages, however, it is either impossible or limited. Polish is a language belonging to the former category, for example (30):

\*To był ten student co Anna (30a)  
tak długoczekala [PP na i]  
it was that student that Anna  
so long waited for  
'It was that student that Anna'd waited for for so long'

\*Kogo kupili prezent [PP dla i]? (30b)  
who did-they-buy present for  
'Who did you buy a present for?'

In the latter category is Breton. As is illustrated in (31), only an inflected preposition can be stranded. (Pcl stands for 'particle-clitic'.)

Per ez eus marvet ur vuoc'h [PP dezhañ i] (31a)  
Per Pcl is died a cow to-3SG/MASC  
'A cow died on Per.'

\*Per ez eus marvet ur vuoc'h [PP da i] (31b)  
Per Pcl is died a cow to  
'A cow died on Per.'

(from Stump 1984: 307)

Restrictions on extraction from PPs are usually accounted for by the Empty Category Principle (ECP). This states that the gap associated with a moved element (a trace) must be properly governed, i.e., governed by a particular type of category. Since prepositions are not normally proper governors (Kayne 1981), extraction is generally impossible. Polish represents the normal state of affairs. English and Breton are marked. In English, prepositions are generally proper governors. In Breton, prepositions are proper governors if they are inflected, i.e., if they bear the feature [+AGR(eement)] (Stump 1984: 307).

## 6. Prepositions, Prepositional Phrases, and other Categories

In the course of demonstrating that prepositions are not merely 'an annoying little surface peculiarity of English' (Jackendoff 1973: 345), Jackendoff lays some stress on similarities between prepositions and PPs on the one hand, and verbs and VPs on the other. A closer examination reveals that while the two types of category are similar to some extent, there are important differences between them, and ways in which prepositions and PPs are more like the other main lexical and phrasal categories.

Complementation potential is an obvious area for comparison. Jackendoff (1977: 32) highlights the fact that both prepositions and verbs take an 'object,' i.e., an NP. In English, this property distinguishes prepositions and verbs from nouns and adjectives, which do not take an NP complement. Examples (32) and (33) illustrate with a verb-related noun and an adjective, respectively.

He [VP sold the house] (32a)

\*[NP the sale the house] (32b)

[NP the sale of the house] (32c)

He [VP likes her] (33a)

\*He is [AP fond her] (33b)

He is [AP fond of her] (33c)

However, this generalization is too strong for languages like Polish, where nouns and adjectives can take an NP complement. What distinguishes prepositions and verbs from nouns and adjectives here is a more subtle characteristic: that only the former categories can take an accusative NP as a complement. Thus, nouns related to verbs that take an accusative NP take a genitive NP complement, for example (34):

Sąsiedzi sprzedali dom (34a)  
neighbors sold house (ACC)

\*sprzedaż dom (34b)  
sale house (ACC)

sprzedaż domu (34c)  
sale house (GEN)

A relevant verb-adjective contrast is presented in (35).

Dziadek zapewni wnukom (35a)  
mieszkanie  
grandad will-ensure grandchildren(DAT)  
accommodation (ACC)

\*Wnuki są pewne mieszkanie (35b)  
grandchildren are sure accommodation (ACC)

Wnuki są pewne mieszkania (35c)  
grandchildren are sure accommodation (GEN)

The verb *zapewnić* 'ensure' takes an accusative NP but the related adjective *pewien* 'sure' takes a genitive NP. In other pairs, as in English, where a verb takes an (accusative) NP, the related adjective takes a PP complement. Example (36) illustrates:

Organizm odparł atak choroby (36a)  
organism resisted attack (ACC) illness  
'The organism resisted an attack of the illness'

\*Organizm był odporny atak choroby (36b)  
organism was resistant attack (ACC) illness

Organizm był odporny na atak choroby (36c)  
organism was resistant on attack illness  
'The organism was resistant to an attack of the illness'

Given this minor qualification necessitated by the variety of case forms associated with NPs in inflected languages like Polish, it is clear that the contrast between prepositions and verbs on the one hand, and nouns and adjectives on the other with respect to NP complements is a matter of some significance.

In Sect. 2.1 above prepositions were presented as taking complements other than NP—a PP, an S', or

## Prepositions and Prepositional Phrases

no complement at all—in a manner similar to verbs. There are also, however, important differences in this area. One is that prepositions probably do not take more than one complement whereas many verbs (e.g., *promise*, *apply*, and *buy*) do. Possible candidate constructions which might involve a preposition with more than one complements are absolute PPs like *with Anna on holiday* (see Sect. 2.1 above) and P-NP-PP strings like the one in *Max sent the trilogy to Bill in New York*. According to Jackendoff (1973: 351), *to* here takes an NP and a PP as complements. Even if these two constructions did involve double complements, and it is far from clear that they do, prepositions with more than one complement would still be a rare phenomenon.

A second difference is less straightforward and stands or falls with the assumption that lexical items like *because* and *although* belong to a separate world class, the complementizer, rather than the preposition. That all complementizers are really prepositions has been argued for by Emonds (1985, 1987) but this position has not been widely adopted. If *because*, *although*, etc. were indeed complementizers, there would be no prepositions that could take a PP or an S' complement but not an NP complement. A verb like *enquire*, on the other hand, takes a PP complement without taking an NP (cf. *enquire about the timetable* versus *\*enquire the timetable*) and a verb like *wonder* takes an S' complement without taking an NP (cf. *wonder whether to write a letter* versus *\*wonder a letter*). If, on the other hand, Emonds's proposal were correct, then complementation by an NP of prepositions would not be a precondition for complementation by other categories.

An obvious area for a comparison of the phrasal projections of prepositions (PPs) with other phrasal categories is distribution. As indicated in Sect. 4 above, PPs can appear in typical NP positions: subject and object, and also as object of a preposition. APs and ADVPs are also—to some extent—possible in these positions (cf. Radford 1981: 210). VPs, however, are not. One might suppose that the italicized strings in the following examples involve VPs in these positions (37):

*To err* is human (37a)

He considered *to err* to be human (37b)

Mark was about *to get lost* (37c)

Given GB assumptions, however, what appears to be a bare nonfinite VP in a complement or adjunct position is always analyzed as an S' with a nonovert subject.

Another position in which PPs (along with ADVPs and NPs) but not VPs can appear is the adverbial position. One might suppose that the italicized string in (38) is a VP in the adverbial position.

She was knocking on the wall *to attract the neighbor's attention* (38)

Again, however, given GB assumptions, this will be an S' with a nonovert subject.

Finally, consider the clause-initial COMP(lementizer) or specifier of COMP position. As noted in Radford (1988: 495–6), PPs—like NPs, APs, and ADVPs—can undergo *wh*-movement, but VPs cannot. The following illustrate (39):

[PP To whom] was Peter talking *t*? (39a)

[NP Which flowers] did he buy *t*? (39b)

[AP How long] was the lecture *t*? (39c)

[ADVP How frequently] did they meet *t*? (39d)

\*[VP Do what] will Peter *t*? (39e)

In conclusion, one can say that prepositions are similar to verbs to some extent in their complementation properties and hence, that structures of PPs and VPs are similar. In their distribution, however, PPs are quite different from VPs and more like the other phrasal categories. Any theory of syntactic categories must accommodate these similarities and differences.

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## Proper Names: Linguistic Aspects

A. Lehrer

### 1. What is a Proper Name?

Proper names are terms for denoting specific individuals or individual groups, with personal names being the most typical. In every society each person has at least one personal name, and in large technological societies, a family name as well.

#### 1.1 Proper Names and Proper Nouns

In some languages, e.g., English, some classes of proper names, such as personal given names and certain place names, can be syntactically distinguished from common nouns by the absence of a determiner and plural, e.g., *Ann Smith* rather than *the Ann Smith*. In other languages, e.g., German, proper names may be preceded by the definite article, as in *die Anna*, *der Hans*. Family names in English are often used with the plural and article, such as *the Smiths live here*. Certain classes of place names typically occur with articles, for instance, rivers, *he lives near the Mississippi River*. Moreover, even with singular personal names, there are productive rules for treating such expressions as classes, as in *I know three Ann Smiths*. *Which Ann are you talking about?* There are also productive rules for converting proper names referring to specific individuals into common nouns: *Ann Smith is more of a Florence Nightingale than a Marie Curie*.

### 2. Personal Name Inventories

Most languages have an inventory of given personal names. In English and other European languages, these items have no meaning. In some cases a meaningful etymon might be found, but speakers are not generally aware of this. Names for children are selected according to the parents' preferences, or perhaps a child is named after someone else in the family.

However, in some societies, names are taken from the common vocabulary, and that meaning constrains the name use. For example, in Japanese *Kazuhiko*, meaning 'first born,' is a possible name for the first born son. Among the Akan of Ghana, children are given names based on the day of the week of their birth (Boadi 1984), and among Gengbe speakers, there is a specific name for each son and daughter born to a woman, based on birth order. For example, *Poovi* is the name given to the fifth daughter.

#### 2.1 Gender Specific Names

Most names are gender specific. Tanz has identified three common patterns: (a) names may be gender specific and phonologically unrelated to a corresponding name of the other gender, such as *Thomas* and *Susan*. (b) A masculine name can serve as a stem to which feminine suffixes are added: from *Paul* can be formed *Paula*, *Paulette*, and *Pauline*. Often the feminine suffix occurs on common nouns as well, as French *-ette* or Japanese *-ko*, meaning 'little.' (c) A name can be formed from a neutral stem to which both masculine and feminine suffixes are added, as in Latin, where feminine *-a* and masculine *-us* could be added to most name stems, for example, *Claudia*, *Claudius*, and *Julia*, *Julius*. The fourth potential pattern of adding a masculine suffix to a feminine base has not been found. That is, the pattern of adding a masculine suffix to a feminine name, like *Susanus* or *Nancyo* does not occur. Sometimes the gender specificity of a name may shift, but the direction is from masculine to feminine. *Shirley* was formerly a man's name, but is now a woman's name.

In some languages, e.g., Chinese, personal given names are taken from the common vocabulary, and gender specificity can be found here as well, with

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boys' names taken from words with meanings of strength and courage, and girls' names taken from words for beauty or gracefulness (Tanz 1982).

### *2.2 Nicknames*

One subclass of personal names is nicknames, and in English there are three primary principles of nicknaming. First of all, a nickname can be constructed from the common vocabulary where an item is selected that is appropriate for the specific individual. For example, a person with red hair might have *Red* as a nickname, or a short person might be called *Shorty*. Nicknames are often used ironically, however, so *Shorty* might also be given to a very tall person. The second nicknaming principle is a conventional relationship between names and nicknames, though this relationship is many-many rather than one-one. Conventional nicknames for *Elizabeth* are *Betty*, *Bess*, and *Liz*; for *Robert* they are *Bob*, *Rob*, *Bobby*, and even *Bert*. However *Bobby* is also a nickname for *Roberta* and *Barbara*. Needless to say the line between formal given names and nicknames is obscured by the fact that what many people consider nicknames can be used as legal names, and among some groups, for example, in parts of the American South, it is common to baptize children with names such as *Jimmy* or *Bobby*. The third principle overlaps with the second, and consists of adding the diminutive suffix *-y* to the name or part of the name: *Anny*, *Maddy*, and *Keithy* are nicknames for *Ann*, *Madeleine*, and *Keith* respectively.

### *2.3 Personal Names for Roles*

Although names generally denote specific individuals, there is a small class of names that function as role generics in informal (and not very polite) speech, particularly as vocatives. Examples are *George* for railway porter in a sleeping car in American English, and *Maria* for a female street peddler in Mexico. There are a few puzzling cases, as *Mack* as an address for a stranger (e.g., *Hey, Mack, you forgot your card.*) Generic names are also used to make general reference more concrete, as in *She'll go out with any Tom, Dick, or Harry who asks her*. Generic names like *John Doe* and *Jane Doe* are sometimes used in court cases to protect the identities of participants.

### *2.4 Proper Names that Shift to Common Nouns*

The shift from proper nouns to common nouns is not unusual, where the common noun denotes something associated with the name, for example, something invented by that person: (*shrapnel*, *sandwich*) or names in honor of someone, for example, the bakery products *bismarck* and *napoleon*. This shift is productive. Thus one can call someone a Rembrandt, a Shakespeare, or a Beethoven to imply that he or she is a great artist, writer, or composer, presumably of any style. However, to call someone a Picasso or a

Schoenberg is likely to suggest an artist or composer of a particular style—e.g., cubist art and atonal music.

## **3. Names for Things Other than Persons**

Although the most salient things that receive proper names are individual people and places, other things receive names as well, generally individual creatures and objects that are identifiable and important. Included in this category are domestic animals, especially pets; important architectural objects such as large buildings, bridges, and highways, and in a few places, houses; swords (in heroic epics), important events, such as wars, and important weather phenomena, such as hurricanes and earthquakes. Many of these things are named by words and phrases taken from the common vocabulary, but they are proper names, nevertheless. Alternative expressions that would be equally appropriate are simply not the correct names. For example, *the Franco-Prussian War* and *the War of 1812* could have been called *the War of 1870* or *the Franco-English War*, but the latter are not their correct names.

### *3.1 Pet Names*

In each of these domains there are conventions, or at least patterns, of naming which vary across cultures (see Carroll 1985). For example, names for cats and dogs tend to be single words, compared to names for racehorses, which tend to have two or three names. Cat and dog names are commonly drawn from the stock of human first names (e.g., *Fred*), or from descriptions (*Fluffy*, *Smoky*), or after famous people (*Cleopatra*, *Plato*). Names with ethnic associations can also be found for breeds from specific places. A German shepherd might be called *Hans* and a Russian wolfhound *Boris* (see Taggart 1962). There is also a small inventory of generic pet names: *Spot*, *Rover*, *Fido*, but these are usually found in low-brow literature, such as cartoons. Racehorses often have names that connote speed and winning, such as *Lucky Lucky* or *Winning Streak*.

### *3.2 Names for Rock Groups*

Names of rock groups, especially heavy metal bands, are often unconventional, even outrageous and offensive. A large class of names deal with death, as in *Grateful Dead*, *The Dead Kennedys*, *Overkill*, *Slayer*, and *Suicidal Tendencies*. Other common categories for selecting names are drugs (*Pot Leaf*, *Alcoholica*), dangerous animals (*King Cobra*, *Scorpions*), weapons (*Iron Maiden*, *U-2*), and abnormality (*Misfits*, *Atrophy*, and *Brain Damage*).

### *3.3 Street Names*

Street names also follow patterns. In the USA, streets are typically named after famous people, geographical features, trees, presidents, places (cities, states, and islands), numbers, and letters. They are not named



after dates for important events, however, a practice which is common in Mexico. In societies where streets may be named after numbers and/or letters, then the streets conform to numerical order (of positive whole integers) and the alphabet.

### 3.4 Brand Names

Brand names are often considered to be a subclass of proper names, since they are written with capital letters, but syntactically they act like common nouns; for example, *He used to buy only Buicks, but now he has a Chevrolet*. Semantically, they do not refer to unique individuals but to classes of objects or to mass substances. However, brand names are like proper names in that they are consciously and carefully applied, and moreover, unlike personal names, they can be copyrighted so that no one else can use them. Names for automobile lines, makes, and models provide an interesting domain in some societies. In the USA popular sources are names for animals associated with strength, speed, and grace (*Cougar, Lark, Falcon*), attractive places, especially resort areas (*Biarritz, Riviera, Monte Carlo*), astronomical objects (*Comet, Pulsar, Galaxy, Mercury*), meteorological objects, especially winds (*Tempest, Cyclone, Duster*), and race-tracks (*Grand Prix, Le Mans, Daytona, Sebring*).

Brand names are one of the few areas of the

vocabulary where words are coined from scratch, and names like *Xerox* and *Kodak* with eye-catching spelling appear. Firms are also careful to select appropriate sounding names, drawing on principles of sound symbolism (Bolinger 1980).

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## Reflexives and Reciprocals

F. Lichtenberk

Reflexive constructions (as in *The man killed himself*) and reciprocal constructions (as in *The boy and the girl like each other*) have been the subject of great interest from the point of view of linguistic typology and comparison, and from the point of view of various generative theories of syntax. The typologically oriented studies have been concerned not only with establishing the types and subtypes of the reflexive and the reciprocal constructions but also with their histories. On the other hand, the generative approaches to reflexives and reciprocals have concentrated on certain subtypes of the constructions, whose properties pose challenges to the given theories.

### 1. Reflexives

Before discussing reflexive constructions, it is best to define a prototypical reflexive situation: in a prototypical reflexive situation (RefS), a participant acts on himself or herself, rather than on any other: *The man killed himself*. A language may, but need not, have a special reflexive marker (RefM), or construction

(RefC) to encode reflexive situations. And a RefS need not be encoded by means of a RefC, even in a language that does have one. This is typically the case with verbs that encode activities that one more commonly performs on oneself rather than on anybody or anything else; witness *The man shaved* (meaning 'The man shaved himself').

Conversely, a construction used to encode reflexive situations may be used with other, nonreflexive, functions, as in *The king himself opened the festival*, where *himself* has an emphatic rather than a reflexive function (see Sect. 4 for more examples).

As far as reflexive markers are concerned, three main types can be distinguished: (a) nominal reflexives, where the marker exhibits properties characteristic of nouns or pronouns in the language; (b) verbal reflexives, where the marker is part of the morphology associated with verbs (an affix, a clitic, or a particle); and (c) possessive reflexives, where the marker exhibits properties characteristic of certain possessive forms, such as possessive adjectives.

## Reflexives and Reciprocals

A nominal reflexive strategy is found in, for example, English: the reflexive elements exhibit properties characteristic of the pronouns, such as gender and number variation (*himself, herself, themselves*), and they function as noun phrases.

A verbal reflexive strategy is found in, for example, Nkore-Kiga (a dialect of Rwanda), where the RefM is a prefix on the verb:

- Nganwa n -aa-ye -shereka. (1)  
 Nganwa PRES PROG -he-REFM -hide  
 'Nganwa is hiding (himself).'

A possessive reflexive strategy is found in, for example, Russian, where the RefM agrees in all the relevant features with the noun it modifies:

- On ljubit svoju rodinu. (2)  
 he he.loves REFM.FEM.SG ACC country.FEM.SG.ACC  
 'He loves his (own) country.'

The distinction between nominal reflexives and verbal reflexives, although clear in theory, is not always so in practice. Since verbal reflexives typically develop from nominal reflexives (see Sect. 4), there are cases where the RefM is neither purely of the nominal nor purely of the verbal type; French *se* is a case in point.

Two basic kinds of nominal and possessive reflexive systems can be distinguished on the basis of the availability of reflexive markers for the grammatical persons: one in which there is a RefM available for each grammatical person, and one in which there are RefMs only for the third person. That is, if a language has any reflexive marking at all, it will have it for the third person, and possibly for the other persons as well. Normally, it is only in the third person that ambiguity between a reflexive and a nonreflexive interpretation may arise in the absence of an explicit reflexive strategy.

In a reflexive situation, one participant plays two (or even more) roles, for example agent and patient, or agent and possessor. Alternatively, one can say that in a reflexive situation the participants playing certain roles (agent and patient) are nondistinct. In clauses with nominal and possessive RefCs, the relevant participant is encoded (at least) twice; each mention encodes one of the two (or more) roles. That is, nominal and possessive RefCs highlight the fact that a single participant is involved in a situation in multiple roles. In clauses with a verbal RefC, the relevant participant is encoded only once; what is highlighted there is the non-distinctness of the participants playing certain roles in a situation.

Even though nominal and possessive RefMs do refer to participants, they do not have independent reference; their referents are determined elsewhere, usually, though not necessarily, in the same clause. It is the existence of an anaphoric relation between a RefM and its antecedent that circumscribes the range

of the phenomena to be considered here. Thus besides prototypical reflexives, included here are also, for example, benefactive, goal, logophoric, and emphatic reflexives.

The range of reflexive functions acquired by nominal reflexives is considerably greater than those acquired by verbal and possessive reflexives; their phonological independence and their (pro)nominal properties permit them to occur in a much larger set of syntactic environments. It is because of this relatively great flexibility and the resulting variety of anaphoric relations with their antecedents that nominal reflexives have received considerably more attention in the linguistic literature than the other two types. This survey also will concentrate on nominal reflexives.

Before investigating the range of RefCs found in languages, it is useful to determine the properties of the prototypical RefC. In a prototypical RefC of the nominal type, the RefM and its antecedent occur in the same clause; the RefM functions as a direct object, and the antecedent functions as a subject; the RefM encodes a patient, and its antecedent encodes an agent; and there is only one noun phrase that functions as antecedent. However, none of these properties of the prototypical RefC is necessary. There are languages where only subjects can be antecedents of reflexives, e.g., Chinese, but other languages allow nonsubject arguments to be antecedents, e.g., English: *The next day, when the giant's grandmother had turned Jack back into himself, he set off for home.*

There may be further restrictions on what kind of noun phrase may function as antecedent; in Chinese, the antecedent must not only be subject, but it must also be animate (at least metaphorically).

Languages commonly allow non patient reflexives and non agent antecedents: *He likes himself too much* and *He bought himself a brand new car.*

There are differences among languages as to the kinds of argument positions—besides direct objects—in which RefMs may appear. English permits indirect-object reflexives and also certain kinds of oblique reflexives, as in *I sent the parcel to myself*, and *She is in love with herself*. English does not always allow locative reflexives, but there are languages that do so quite freely; compare the following sentence (3) from Dutch and its English gloss (where *him* is coreferential with *John*):

- Jan zag een slang naast zich. (3)  
 John saw a snake near REFM  
 'John saw a snake near him.'

English and some other languages also allow nominal reflexives in nonargument positions, in modifying positions within noun phrases: *Have you seen the picture of yourself in today's paper?*

Some languages allow reflexives in subject position; in such cases the antecedent is outside the clause in

which the RefM occurs. Reflexives of this kind are usually referred to as 'logophoric'; they occur in clauses embedded under certain verbs, called 'logophoric' by Kuno (1987). Kuno defines logophoric verbs as those that encode various speech acts and mental events or states and that take as their arguments noun phrases that encode the speaker, the experiencer, or the addressee. In the following example (4) of a logophoric reflexive from Chinese, the RefM may have as its antecedent either the subject of its own clause (*Lisi*) or the subject of the higher clause (*Zhangsan*):

- Zhangsan juede Lisi dui ziji mei xinxin. (4)  
 Zhangsan think Lisi to REFM no confidence  
 'Zhangsan thought that Lisi had no confidence in himself/him.'

In terms of the syntactic configuration of a RefM and its antecedent, the commonest situation is for the two to occur in the same clause; they are 'clause mates.' However, a number of languages allow 'long-distance' anaphora, where the RefM and its antecedent are in separate clauses, but still within the same sentence. Long-distance anaphora is characteristic of logophoric reflexives (see the Chinese example (4) above). In fact, in Chinese and some other languages such long-distance anaphora is in principle unbounded; provided certain conditions are met, there is no limit on how many clause boundaries may intervene between a RefM and its antecedent. In English, long-distance anaphora is found with emphatic reflexives, for example, *Mr Smith said he could not comment on rumors that the bank wanted to replace some management staff, including himself*. It is also found with 'picture-noun' reflexives: *The [picture of herself/song about herself] that Mary [painted/composed] in a couple of hours won the first prize*.

Some languages, English among them, permit the antecedent to be not just outside the clause where the RefM occurs, but even outside the sentence (Zribi-Hertz 1989). And in Japanese—for some speakers—the RefM need not have any overt, syntactic antecedent at all; in such cases the RefM refers to the speaker(s):

- Zibun-wo Naomi-ga aishi-teru. (5)  
 REFM-DO Naomi-SU love-PROG.PRES  
 'Naomi loves me.'

The antecedent of a reflexive is typically a single noun phrase, but there are languages, such as English, that allow split antecedents: *Mary whispered secret things to Paul about themselves*.

Reflexive constructions are normally used not only when it is the whole of a participant that is affected by his or her own action (as in *The man killed himself*), but also when only part of him or her is. In some cases, the partitive nature of the reflexive is overt: in

addition to the RefM, the sentence also contains specification of the part affected, as in Czech:

- Učesala si vlasy. (6)  
 she.combed REFM.DAT hair.PL.ACC  
 'She combed her hair.'

The body part affected by the action is treated as a patient; the RefM encodes a beneficiary.

However, the partitive nature of a reflexive may be covert: it is the participant as a whole that is treated as affected by the action, either because the exact identity of the part affected is not relevant or not known, or, because of the nature of the event, the identity of the part affected is self-evident, as in the next two Czech examples, respectively:

- Umyla se. (7)  
 she.washed REFM.ACC  
 'She washed (not necessarily the whole of her body).'

The next example (8) is broadly synonymous with the overt partitive reflexive (6) above:

- Učesala se. (8)  
 she.combed REFM.ACC  
 'She combed her hair.'

## 2. Reciprocals

As will be seen in what follows, there are some similarities between reflexive and reciprocal constructions; much of what has been said above about reflexives applies, *mutatis mutandis*, to reciprocals as well. As with reflexives, it is necessary to make a distinction between reciprocal situations (RecS) on the one hand and reciprocal markers (RecM) and reciprocal constructions (RecC) on the other. In a prototypical reciprocal situation, there are two participants that play identical pairs of roles vis-à-vis each other, e.g., agent and patient, as in *The two boys punched each other*. A reciprocal situation need not be encoded by means of a RecC even in a language that does have one. This is typically the case when the relations in the type of situation being encoded are normally or necessarily reciprocal, as in *They met at five o'clock*; but cf. Dyirbal (Australian):

- Balagara daymbal-daymbal-bari (9)  
 -ju bu bi -jga.  
 two (people).NOM find -find -RECM  
 -PAST half way-LOC

'The two people met each other halfway.'

Conversely, a construction used to encode reciprocal situations may have other, nonreciprocal functions (see Sect. 4 for examples).

Two basic types of reciprocal markers can be distinguished: (a) nominal reciprocals, where the marker exhibits properties characteristic of nouns or pronouns; and (b) verbal reciprocals, where the marker is part of the morphology associated with verbs (an affix, a clitic, or a particle). The English RecMs *each*

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*other* and *one another* are of the nominal type (they function as noun phrases): the Dyrbal RecM (9) is of the verbal type.

Even though they represent participants, nominal RecMs (like nominal RefMs) do not have independent reference: their referents are determined elsewhere, typically (though not necessarily) in the same clause. Again, one can use the existence of an anaphoric relation between a RecM and its antecedent to define the range of phenomena to be discussed here.

RecCs are not restricted to encoding situations with only two participants involved in mirror image relations to each other. They may be used to encode situations with more than two participants playing a pair of roles, regardless of whether each of the participants stands in a reciprocal relation to all the others or only to some of them. Thus in *The members of the winning soccer team congratulated each other* it is not necessarily the case that each player exchanged congratulations with every other member of the team. (A discussion of such uses of the English RecM *each other* may be found in Langendoen 1978.)

In many languages, the RecCs are also used to encode 'chaining' (or 'linear configurational') situations, where (most of) the participants play identical pairs of roles, but not vis-à-vis each other, as in the Japanese example and its English gloss:

- Shitai-ga kasanari -a -tte iru. (10)  
corpse-SU pile on top-REC-M-PROG PRES  
'The corpses are piled on top of one another.'

As is the case with reflexives, it is nominal reciprocals that exhibit a greater range of uses relative to verbal reciprocals. In a prototypical nominal RecC, the RecM is a direct object, the antecedent is a subject, and the two are in the same clause. In many languages, the RecM may occur in positions other than direct object; witness English *They often buy presents for each other*, and *They were sitting next to one another*. They may also occur in modifying positions within noun phrases: *They wrote malicious articles about each other*, and *They praised each other's efforts*.

The antecedent of a reciprocal is typically a subject, but some languages, English among them, allow non-subject antecedents: *He kept goading them against each other*.

Prototypically, a RecM and its antecedent are in the same clause, but there are languages, such as English, that do allow long-distance anaphora: *The counselor warned the couple that preoccupation with each other's shortcomings would only make the situation worse*.

### 3. Reflexives and Reciprocals in Modern Syntactic Theories

Reciprocal and, even more so, reflexive constructions have received a considerable amount of attention in various generative theories of syntax. It is the nominal

subtypes of the constructions that the theories have concentrated on; this is because of the anaphoric relations between the reflexive and the reciprocal markers on the one hand and their antecedents on the other. When both types of construction are discussed, it is usually assumed that they are subject to the same rules. In generalized phrase structure grammar, it has been suggested that the anaphoric relations can be handled by means of general feature-instantiation principles. In relational grammar, multi-attachment is used as the mechanism to account for (at least some) reflexives. It is in the framework of the government and binding theory that reflexives and reciprocals have received most attention by far, and the subsequent discussion will focus on the treatments of the constructions within this theory.

In government and binding, reflexives and reciprocals are explicitly assumed to be elements of the same kind, called 'anaphors' (as opposed to 'pronominals' and 'R-expressions' (referential expressions); see *Anaphora*). The distribution of anaphoric elements is said to be governed by the following binding condition: an anaphor is bound in its governing category (Chomsky 1981: 188; see also *Binding*). In broad terms this means that an anaphor and its antecedent must be clause mates, but detailed research on the anaphoric elements in a number of languages has revealed a considerable number of difficulties with the anaphor binding condition. The problems most often discussed have to do with anaphora across noun-phrase boundaries (with picture-noun reflexives), anaphora across clause boundaries, nonoccurrence of anaphoric elements in certain environments where pronominals are unexpectedly required instead, and alternation between anaphoric elements and pronominals in what appears to be one and the same structural position. There are other problems that are less frequently discussed, but that are nevertheless important as well: anaphora across sentence boundaries (is this kind of anaphora to be handled in a syntactic theory that assumes the sentence to be the highest level of syntactic analysis?), reflexives without syntactic antecedents, and split antecedents. Another problem is that the category of anaphoric elements in a language need not be homogeneous; i.e., the various anaphoric elements need not be subject to exactly the same rules. For example, 3rd person reflexives on the one hand, and 1st and 2nd person reflexives on the other, need not exhibit exactly the same properties (they do not in English); there may be differences between the reflexives and the reciprocals (as there are in English; see Lebeaux 1983), and there may even be differences between two sub-types of a construction (see Rosen 1981 for a discussion, within the framework of relational grammar, of the differences between the two types of reflexive in Italian). (A summary of many of the problems with the mainstream government and binding approaches to reflexives can be found in Zribi-Hertz 1989.)



The various attempts to overcome the problems with anaphoric elements fall basically into two categories: (a) those which are purely structural; and (b) those which supplement syntactic conditions with other, nonstructural conditions. A purely structural approach may, for example, posit two different underlying structures for sentences in which an anaphor appears to alternate with a pronominal. A great deal of work has also gone into defining and refining the concept of 'governing category' crucial to the binding conventions. For example, a governing category may be required to contain an 'accessible' subject or to contain an 'independent' tense. The notion of 'command' (the antecedent commanding the anaphor), crucial to binding, has also received a considerable amount of attention, and different kinds of the command relation have been proposed. It has also been suggested that unbounded anaphora be handled in logical form rather than in the syntactic component of the theory.

On the other hand, there are approaches to anaphora that claim that attempts at purely syntactic accounts are bound to be unsuccessful, and that there are semantic, pragmatic, and/or discourse factors that must be taken into consideration as well. For example, Kuno (1987) argues that English reflexives are used if and only if the referent is a direct recipient or target of the event encoded in the sentence. This generalization is said to account for sentences like the following: *John left his family behind him* and *John fell in love with himself*. Kuno also uses the notion of 'empathy' to account for certain uses of English reflexives: subject to a number of qualifications, a sentence where a reflexive pronoun and its antecedent are clause mates must be interpretable as involving the speaker's empathy with the referent of the reflexive. Picture-noun reflexives also are sensitive to empathy; they are best when the speaker empathizes with the referent of the reflexive. The antecedent of a picture-noun reflexive must be (construable as) an actual speaker/perceiver; i.e., picture-noun reflexives are logophoric phenomena. In fact, long-distance reflexive anaphora in all the languages for which the phenomenon has been reported (whether of the picture-noun type or not) involves logophoricity. According to Kuno, the use of English reflexives is governed, besides syntactic constraints, by a number of nonsyntactic constraints, such as speech act empathy hierarchy, topic empathy hierarchy, and awareness condition. It is not only English reflexives that are sensitive to empathy, but reflexives in other languages (e.g., Japanese, Korean, and Turkish) as well. As far as English reciprocals are concerned, Kuno suggests that they are typically used to encode situations where there is active interaction of the participants and where the participants are aware of each other's involvement in the situation.

A somewhat different analysis of English reflexives,

although in some ways related to Kuno's, is the discourse-oriented approach of Zribi-Hertz (1989). According to Zribi-Hertz, a serious problem with the mainstream government and binding treatment of reflexives is that its assumptions about English reflexives are based on sentences in isolation. When one considers discourse, it becomes clear that nearly all of those assumptions are inadequate. English reflexives cannot introduce new participants into discourse; that is, they must be bound, but not necessarily in their governing category (and with 1st and 2nd person reflexives the antecedent need not be explicit). Zribi-Hertz introduces the semantic/pragmatic concepts of '(minimal) subject of consciousness,' and 'domain of point of view.' The subject of consciousness is the participant whose thoughts or feelings are conveyed in a given portion of discourse; this concept is related to Kuno's notion of logophoricity. The domain of point of view is a portion of discourse characterized by one and only one narrative viewpoint. According to Zribi-Hertz, most of the syntactic constraints on reflexives that hold for simple clauses may be violated in discourse as long as the reflexive and its antecedent (the minimal subject of consciousness) occur within one and the same domain of point of view.

#### 4. Historical Developments of Reflexives and Reciprocals

In sharp contrast to the studies of anaphora in the various generative syntactic theories stand typological studies of the constructions; see Faltz (1985), Geniušienė (1987) Kemmer (1992), and Nedjalkov and Guentcheva (1999). These studies aim at developing typologies of the constructions (see Sects. 2 and 3 above), but they are also interested in the origin of the constructions and in their subsequent developments, in the range of functions that are acquired by constructions which at some time had (only) a reflexive or a reciprocal function.

Verbal reflexives typically develop from nominal reflexives: over time, an erstwhile nominal element loses its original properties and gravitates more and more to the verb. Nominal reflexives have, according to Faltz (1985), two main sources. One is emphatic pronouns; in the early stages of the development such pronouns are used to emphasize that an event is directed at the performer himself or herself rather than at any other participant, which is the more common kind of case. Over time, the emphatic function may be lost, and the elements acquire a purely reflexive function. (In some languages, English among them, the reflexives still have an emphatic function.) The other main source of nominal reflexives is nouns such as 'body' and 'soul'; over time, such nouns are grammaticalized into reflexive markers.

Reciprocal markers often develop from reflexives. In many languages, the reciprocal and the reflexive

## Reflexives and Reciprocals

functions are marked in the same way; Imbabura Quechua is one such language:

- Wambra-kuna riku-ri -rka. (11)  
 child -PL see -REFM/REFM-PAST.they  
 'The children saw each other/themselves.'

It is not uncommon for a language to have more than one nonpossessive reflexive and/or reciprocal construction. In such cases, the two or more constructions are not (fully) synonymous: as discussed by Haiman (1983) and Kemmer (1992), there is a direct correlation between, on the one hand, the degree of structural separateness of a RefM or a RecM (e.g., an independent element vs. an affix) and its phonological size (in terms of the number of syllables), and, on the other hand, the degree of conceptual independence of the participants involved in the situation being encoded and/or the degree of conceptual independence of the relations that hold among the participants: greater structural separateness and greater phonological size are associated with greater conceptual independence, and lesser structural separateness and smaller phonological size are associated with lesser conceptual independence.

Both reciprocals and, especially, reflexives, tend to acquire a number of other functions, more or less directly related to the source functions. The range of functions that reflexive and reciprocal markers may develop are discussed in detail in Geniushienė (1987), Kemmer (1992), and with a focus on reciprocals, in Nedjalkov and Geuntcheva (1999). The following brief survey of the functions that reflexives and reciprocals may develop is not exhaustive; it contains only those kinds of developments that are relatively common.

As mentioned above, reflexives often develop into reciprocals. They also develop into middle-voice markers, as in Lithuanian:

- Mes su -si -jaudinome dėl (12)  
 atsitikim-o.  
 we.NOM PFV-'REFM'-excited because of  
 incident-GEN  
 'We got excited because of the incident.'

(The distinction between reflexives and the middle voice is not a sharp one; rather, the two categories merge into one another. Furthermore, different linguists may define the two categories in different ways.)

Reflexive markers sometimes develop a 'deagentive' function: they are used to encode spontaneous events, events not attributed to any external agency, as in French:

- La porte s' -est fermée (13)  
 (toute seule).  
 ART door 'REFM'-AUX close.PASS PARTICP  
 all alone  
 'The door closed (by itself).'

Closely related to the spontaneous-event marking function is a range of functions that can be loosely characterized as 'passivizing.' In both the spontaneous-event and the passivizing functions, the subject of the sentence encodes the entity undergoing the event; the difference is that in the former no external agent is implied, whereas in the latter there is an agent, implied or expressed. The following are examples of an agentless passive from Northern Paiute (Uto-Aztecan) and an agented passive from Romanian:

- Nopi na -a'taa -'ki -'ti ya'a. (14)  
 house 'REFM'-sit.PL -CAUS -PRES here  
 'Houses are put up here.'

- Casa s -a construit (15)  
 de un englez.  
 house.DET 'REFM'-PERF build.PASS PARTICP  
 by an Englishman  
 'The house was built by an Englishman.'

Originally reflexive markers can also develop a 'depatientive' function: the event is directed at a patient, but the patient is not encoded. Such sentences typically express general or habitual situations: the event is directed at any entity of a certain kind, as in the next example from Georgian:

- zayl-i i -kbin -eb -a (16)  
 dog -NOM 'REFM'-bite -THEM -it.  
 'The dog bites.'

Reciprocal constructions are used in a number of languages to signal joint involvement of two or more participants in an event, as in the example from Ainu:

- Tun newa u -rešpa wa okai (17)  
 ruwe ne.  
 two people LOC 'RECIP'-livePROF dwell  
 PART PART  
 'They were living there together.'

And like reflexives, reciprocals may also acquire a depatientive function, as in To'aba'ita (Austronesian):

- Roo wane kero kwai -labata'i. (18)  
 two man they.DU 'RECIP'-harm  
 'The two men harm (others).'

In many languages, clauses that contain a reflexive or a reciprocal construction exhibit reduced transitivity, even if they contain verbs that are otherwise transitive (see *Transitivity*). When the reflexive or the reciprocal markers have some additional, nonreflexive, nonreciprocal uses, it is sometimes suggested that they have a core function of detransitivization. On the other hand, one can argue that such reduced transitivity is a reflection of the semantics of the reflexive and the reciprocal constructions. Prototypical reflexive and prototypical reciprocal situations are neither like prototypical intransitive nor like prototypical transitive situations: although they contain an agent and a patient, the two are not (fully) distinct

from each other; in a sense, they can be regarded as members of one set. This intermediate status of reflexive and reciprocal situations may be reflected in their encoding: clauses with reflexive and/or reciprocal constructions may be intermediate between (fully) intransitive and (fully) transitive clauses.

More recent studies of reflexives and reciprocals, both from formal and from typological perspectives, can be found in Frajzyngier and Curl.

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## Relative Clauses

N. Fabb

The typical case of a relative clause is a clause which modifies a noun. For example in the phrase *the man who is old*, the clause *who is old* modifies the noun *man*, specifying which man we are talking about. We can see that a relative clause resembles an attributive adjective, by comparing the phrase *the old man*, where the adjective *old* modifies the noun *man* by specifying which man we are talking about. Part of the interest of relative clauses is that they can be built in many different ways; even in English there is a variety of different ways of building relative clauses. In linguistic research, relative clauses have often functioned as core data in claims about fundamental syntactic issues.

### 1. Relative Clauses in English

A relative clause acts as a modifier by restricting the semantic domain covered by a syntactic constituent (typically a noun). For example, in *the man who I know very well*, the relative clause *who I know very well* restricts the semantic domain of *man*, restricting it from any man down to specifically the man who I know very well. A construction of this type can also be called a 'restrictive relative clause' to distinguish it from another construction which in English is almost identical in form but different in function, a 'nonrestrictive relative clause' (also called appositive relative clause). This fact shows that like other modifiers, relative clauses can be 'imitated' in syntactic position

and form by constituents which do not modify in the sense of restricting reference but simply add further information. An example of a nonrestrictive relative clause is found in *John, who I know very well*; here, the relative clause *who I know very well* does not restrict the semantic domain of *John*, but simply adds extra information. This article will follow common practice in using 'relative clause' informally to mean 'restrictive relative clause.'

Keenan and Comrie (1977) and Comrie (1981) define 'relative clause' (= restrictive relative clause) in terms of its function, and their definitions, slightly changed here, will be used in this article. A restrictive relative clause specifies a set of objects in two steps: (a) a larger set is specified, the domain of relativization, and (b) the domain is restricted to some subset of which a certain proposition (the 'restricting sentence') is true. In English the domain of relativization is expressed in surface structure by the head nominal (*man*), and the restricting sentence is expressed by the restricting clause (*who I know very well*). In some languages, such as Turkish, the restricting sentence is expressed by a noun phrase, which by this definition is therefore called the relative clause even though it is not syntactically clausal. This definition thus defines 'relative clause' in terms of its semantic function rather than its syntactic structure.

In a relative clause like *The man whose books I read* it is useful to distinguish and name the parts. Here the

## Relative Clauses

head is *man*, but it could include another modifier, so that *old man* could function as a head for a relative clause. The restricting clause is *whose books I read* (Keenan and Comrie find the restricting sentence or proposition by reconstructing this clause as *I read his books*). The fronted *wh*-phrase *whose books* can be called the relative phrase; there is no consistent term for this item, which in English can include *that* or a *wh*-pronoun like *who*. There is a gap after *read* where the object, which we would expect for a transitive verb like *read*, is missing. Keenan and Comrie suggest the term NPrel as the name for 'the NP in the restricting sentence that is coreferential with the head NP as the NP relativized on', here the NPrel is the possessive pronoun *his*.

English relative clauses typically take a nominal head, which is the head of the noun phrase containing the relative clause. Nonrestrictive relative clauses can in addition take as heads many types of phrase including even verb phrases as in *John luckily escaped, which I unluckily didn't*, but restrictive relatives appear to take only nominal heads. More than one relative clause may be attached to a single head, as in (Jespersen's example) *Can you mention anyone that we know who is as talented as he is?* It is possible to extrapose a relative clause, as in *The man arrived yesterday that I wanted to introduce you to*.

Relative clauses found in English can be classified according to the presence or absence of various key components—the relative phrase, the head, and tense. A relative clause without a relative phrase is called a bare relative clause or a contact clause, an example being *the man I like*. The object is the most common function to be relativized in this type of clause; dialects of English differ in whether they allow a subject gap in a bare relative, but these tend to be generally acceptable in existential sentences such as *there is a man wants to see you*. A relative clause which apparently lacks a head is called a free relative clause, also sometimes called a headless relative (though some argue that the head is present syntactically but phonologically empty, and hence that this is a misleading name). Examples include *I liked who I met* and *I like whoever I meet*; here there appears to be no head preceding the relative phrase *who/whoever* (analysis 1 below), though it has alternatively been argued (analysis 2 below) that *who/whoever* is not the relative phrase but is itself the head (followed by a bare relative):

I liked [NP [S who I met]] (1)

I liked [NP who [S I met]]  
          head       relative phrase (2)

Finally we can classify relative clauses according to their tense. There are various types of nonfinite relative clause in English, including the *-ing* participial type with a subject gap *the man reading the book*,

the passive type *a vase broken by dropping it on the floor*, the *to*-infinitive type *a person to fix the washing machine*, and the *for-to* type *a problem for you to puzzle over*.

The presence or absence of key features is one type of distinction between relative clauses in English; another is the choice of relative phrase. English allows a wide range of relative phrases. These include most of the *wh*-words (with dialectal variation, for example in whether *what* can be used), as in *the place where I was born* or *the question why I was asked here*. A *wh*-word compounded with *ever* forms a relative phrase which can be used in free relatives, as in *whoever arrives first has to make the pasta*, or *eat whatever you like*, or *do it however you want* (*wh-ever* words are used also in '*wh-ever* adj' structures as in *whenever possible*). A *wh*-word inside a phrase can make that phrase able to function as a relative phrase, as in *the man whose mother I met* or *the place in which I was born*. Ross (1967) called this phenomenon 'pied piping,' using an analysis in which the *wh*-word is moved to the front of the sentence from the base-generated position inside the sentence, and when it moves it can take the surrounding constituents with it; the term 'pied piping' draws an analogy with the fairy-tale Pied Piper of Hamlyn taking the rats with him when he leaves the town. Ross demonstrated that pied piping could result in a sentence in which the *wh*-word is embedded very deeply in the relative phrase, and cited the example *reports the height of the lettering on the covers of which the government prescribes should be abolished*. Pied piping is subject to certain island restrictions, described by Ross, and Bresnan and Grimshaw add that pied piping does not occur in free relatives. Sometimes a preposition is both pied-piped and repeated in its place in the sentence. In older English a 'pied-piped' combination of 'preposition + *wh*-phrase' can be substituted by a compound with the structure '*where-preposition*' (*in which* becomes *wherein*, etc.).

In addition to *wh*-words, certain conjunctions can act as relative phrases, most prominently *that*, as in *the man that I saw*. In southern standard English *that* is the oldest surviving relative phrase (from Old English) and was the most commonly used in Middle English; examples of *that* in early modern English include its use in nonrestrictives and with inanimate heads, but in these two contexts, *that* has been replaced by *wh*-words (partly under the influence of Latin-inspired traditional grammar). In addition to *that*, words like *as* and *but* can also act as relative phrases, as in the following examples from Jespersen (again dialects differ in acceptability of these): *such women as knew Tom*; *none but are shipwrecked*. In addition to these overt relative phrases, some syntacticians argue that there is also a relative phrase which is not phonologically realized. This null relative phrase would for example be found in the gap position at the front of a contact clause (in analysis



2 above); in this analysis, a relative clause would always have a relative phrase, overt or null. Some syntacticians argue that *that* is not itself a relative phrase but is simply a subordinating conjunction or complementizer and is accompanied by a null relative phrase, as in the following analysis:

I liked [<sub>NP</sub> the man [<sub>S</sub> that [e] I met]]  
relative phrase

As a final comment on English relative clauses, it is worth noting that this is an area which has interested prescriptive grammarians, including issues such as whether *whom* should be used, whether a preposition can be 'dangled' (stranded) at the end of a sentence, and which relative pronoun should be used in restrictive and nonrestrictive relative clauses.

## 2. Relative Clauses in Other Languages

Few languages have been found which lack relative clauses, though Comrie (1981) cites the Australian language Warlpiri as a possible exception. As Keenan and Comrie point out, given their semantic definition which we are using here, relative 'clauses' are not always actually clauses. For example, the following Turkish relative clause is expressed syntactically by a noun phrase which is headed by a nominalized verb (nominalized with the suffix *diğ*) and has a genitive subject (*Hasan-ın*). The noun phrase which expresses the relative clause itself carries possessive morphology, and in effect 'possesses' its head *patates-i*:

[<sub>NP</sub> Hasan -ın Sinan-a ver -diğ-i]  
patates-i yedim  
Hasan-of Sinan-to give his  
potato-ACCUSATIVE I-ate  
'I ate the potato that Hasan gave to Sinan'

Typological distinctions involving relative clauses include the position of the head relative to the clause, the grammatical functions within the clause which the NPrel can occupy, the extent to which the clause is nominalized, and whether the clause forms a constituent with its head. Lehmann (1984) provides an extensive crosslinguistic survey of relative clauses, while Peranteau, et al. (1972) is a seminal collection of papers on the analysis of relative clauses in many languages (see Keenan 1985, Payne 1997).

In English the head is outside the relative clause, and the clause follows the head; this type of clause can be called a postnominal relative clause. In some languages (e.g., Turkish) the clause precedes the head, and so can be called a prenominal relative clause. Tagalog is a language in which the clause is found in both prenominal and postnominal positions. There is however another possible relation between the head and the relative clause, which is that the head might be contained inside the relative clause which modifies it; clauses like this are called 'internally headed'; an example from Bambara is:

tye ye ne ye no min ye san  
man PAST I PAST horse which see buy  
'The man bought the horse that I saw'

This is classified as an internally headed clause because the apparent syntactic structure is:

tye ye [ne ye no min ye ] san  
man PAST I PAST horse which see buy  
head  
subject object verb

Comparing this with a simple sentence, we can see that *no* ('horse') fills the object position inside the sentence (where in English there would be a gap). Bambara is typical of languages which allow internally headed relative clauses in that it has an Object-Verb word order.

ne ye no ye  
I PAST horse see  
'I saw a horse'

Crucially, in the relative clause structure *no* is also interpreted as the head modified by the relative clause (there is no external head, as there is in English, where *horse* would be the external head). We look at the syntactic analysis of internally headed relative clauses in Sect. 3.

Typically the internally-headed relative clause is treated as a nominal constituent (e.g., a noun phrase), as indicated morphologically by a relative marker, nominalizing suffix or case suffix. The internally headed relative clause is interpreted in a way similar to an externally headed clause (i.e., the S or nominalized S is interpreted similarly to a [<sub>NP</sub> head [<sub>S</sub> relative clause]] construction). The internal head may be marked as such, as in Bambara, where the relative marker *min* follows the internal head, or may not be marked, in which case ambiguity may arise if there is more than one NP inside the clause which could be interpreted as the head; an example of this ambiguity is the following Imbabura Quechua sentence which can mean either 'the town you are coming to is small' or 'the town you are coming from is small'; there is no indication in the clause to show whether the NPrel should be interpreted as 'from-place' or as 'to-place':

Kan shamu-shka llajta-ka uchilla-mi  
you come-NOMINALIZER town-TOPIC small-VALIDATOR

Sometimes the head of the relative clause is represented by a full noun phrase both outside and inside the relative clause, thus appearing as a mixture of internally- and externally-headed relative. Clauses of this type are called correlatives (the term 'corelative' is also used); the following example is from Hindi:

Ādmī ne jis cākū se murgī ko  
man ERGATIVE which knife with chicken ACCUSATIVE  
mārā thā, us cākū ko Rām ne dekhā  
killed that knife ACCUSATIVE Ram ERGATIVE saw  
'Ram saw the knife with which the man killed the chicken'

## Relative Clauses

Here, the NPrel is realized as a full NP *jis caku* inside the clause (as with an internally headed relative clause); but it is also realized as a full NP *us caku* outside and following the clause (as with an externally headed, pronominal relative clause). Lehmann (1986) distinguishes a type of clause which he calls 'adjoined'; an adjoined relative clause is not a constituent with its head (incidentally, indicating again the difference between head of a relative and head in the X-bar sense). Lehmann characterizes the Hindi correlative as an 'adjoined' type of relative clause.

In English, a pronoun may be found in the place where we expect a gap, as in *the books which I don't remember who read them*; here, *them* fills an expected gap after *read*. The acceptability of these sentences varies according to dialect and register; they can be used as ways of getting around island constraints as in the quoted example, where a gap would be illegitimate because it violates the complex noun phrase constraint. Jespersen calls these 'exhausted relative clauses' and Sells (1984) names the pronoun an 'intrusive pronoun'; both terms indicate that the pronoun in English sentences of this kind is seen as somehow syntactically alien, a filler inserted as an aid to comprehension. Sells argues that this is distinct from the resumptive pronoun—another widely found type of gap-filling pronoun (as in the following Hebrew example), where the pronoun has a clear syntactic function, acting as an operator-bound variable:

ha'iš	sē	pagasti	oto
the man	that	I-met	him
'the man that I met'			

An NPrel can be chosen from some syntactic positions more easily than others; the subject position is generally the most accessible position for relativization from (i.e., the NPrel corresponds to the subject of the relative clause). Resumptive pronouns tend to be used for NPrel which are in less accessible positions, as Arabic demonstrates: a resumptive pronoun can be used in all grammatical positions except subject.

In some languages there is a morphological matching between the external head and the NPrel. Comrie (1981) gives as an example Persian, where the external head of the relative clause may be a subject in its own sentence, but if it is related to an NPrel in the relative clause which is an object, the upper subject may carry object marking (accusative case). Thus agreement between the upper subject and the lower object takes priority over grammatical function marking in the upper clause:

Zan-i-rā	[ke didid]	injā-st
woman ACCUSATIVE	that you-saw	here-is
'the woman that you saw is here'		

In Ancient Greek, the matching works in the opposite direction: a genitive external head may lead the rela-

tive phrase in the relative clause also to take genitive case, even though it relates to a direct object NPrel.

### 3. Syntactic Theory and Relative Clauses

Relative clause constructions have been of interest in their own right and for the insights which they offer into the organization of the grammar. One example of more general insights involves syntactic islands. When syntactic islands were first identified in the mid 1960s, relative clause constructions offered some of the earliest examples; Chomsky's A-over-A constraint and Ross's complex noun phrase constraint both drew on the fact that a noun phrase can be extracted out of a verbal complement inside another noun phrase, but not out of a relative clause inside another noun phrase.

A second area in which relative clauses have offered more general insights is in their instantiation of a hierarchy of grammatical functions. Crosslinguistically, the NPrel in a restrictive relative clause can come from grammatical functional positions ranging from subject to 'object of comparison,' but which NPrels are acceptable varies from language to language. Keenan and Comrie (1977) showed that in a language the existence of one possible NPrel could usually be related to the existence of other possible NPrels. They showed this in two stages. First they argued that it was possible to identify a universal set of possible relative-clause formation strategies; a language could use one or more of these strategies. Then they showed that each strategy used by a language could be used to extract NPrels from one or more positions, and that where several NPrels were possible for a particular strategy, those NPrels formed a continuous subset of the following ordered set, which they called the 'accessibility hierarchy':

subject—direct object—indirect object—oblique  
argument NP—genitive or possessor NP—object of  
comparison

To show how this works, consider English. Keenan and Comrie's relativization strategies are differentiated according to the position of the head (three options—before, after, or inside the clause), and according to whether the grammatical function of the NPrel is unambiguously indicated on the relative phrase (or some other element in the clause). Thus one relativization strategy in English is to construct a postnominal relative clause using a relative phrase like *who* (which does not by itself mark the grammatical function of the NPrel). Using this relativization strategy it is possible to relativize from subject position and from direct object position:

The man who saw you	(NPrel is in subject position)
The man who I saw	(NPrel is in object position)

A different relativization strategy ('English strategy 2') must be used for extraction from other positions; this involves the use of a preposition or a morphological

change of the *wh*-word to indicate the grammatical function of the NPrel, as in:

The man who I gave it to  
(NPrel is in indirect object position)  
The man whose book I saw  
(NPrel is in possessor position)

Keenan and Comrie's point is that a particular strategy picks out a continuous segment of possibilities along the hierarchy, which means that if it is possible to use 'English strategy 2' to relativize from indirect object and from possessor, it must also be possible to use it to relativize from oblique argument NP since this is between the other two on the hierarchy, and this is shown by the following example:

The box that I put the money in  
(NPrel is oblique argument NP)

Similarly, since 'English strategy 2' cannot be used to relativize direct objects, we can predict accurately that it can also not be used to relativize subjects (i.e., neither objects nor subjects are relativized using a preposition, or a morphologically marked relative phrase). Keenan and Comrie argue that there is always a strategy which can be used to relativize subjects (which are the most accessible on the hierarchy). In addition to suggesting a hierarchical organization, Keenan and Comrie's findings are of more general interest in that they provide evidence for the existence of specific grammatical functions. For example, by showing that a relativization strategy in a language may distinguish between indirect object and oblique argument they demonstrate that these are potentially distinct grammatical functions in a language. Their account also provides strong evidence for the notion of subject, as well as for the special status of the subject (at the top of the hierarchy, and always relativizable). Keenan and Comrie address the issue of subject languages where the notion of subject is in some doubt, including Tagalog, ergative languages (like Basque), and 'topic' oriented languages (like Lisu), and suggest that the notion of subject is nevertheless useful here too. For example, they address the issue of Dyirbal relative clauses, where only absolutive NPs can be relativized, and ergative NPs cannot. They argue, in keeping with the accessibility hierarchy, that the absolutive NPs are the subjects in both transitive and intransitive sentences (going against the traditional analysis whereby absolute NPs in transitive sentences are interpreted as equivalent to object rather than subject). Revisions have been suggested to Keenan and Comrie's claims. Lehmann (1986) suggests that subhierarchies should be distinguished depending on whether the NPrel depends on a verb (e.g., a subject NPrel) or a noun (e.g., a possessor NPrel). Lehmann also points to certain tendencies: adjoined relative clauses (which are typically the least nominal) tend to allow relativization of the largest range of

syntactic functions, and prenominal relative clauses tend to allow relativization of the smallest range. Maxwell (1979) suggests that while the hierarchy is basically correct, a better account is given by a different characterization of the strategies of relativization, which he bases on work by Givón.

Another area in which relative clauses appear to offer some more general insight is into the nature of appositive modifiers, of which nonrestrictive relative clauses are one example. English nonrestrictive relative clauses differ from restrictive relatives most obviously in that they are spoken with an intonational break (like parentheticals). In many languages, this is the only difference between the two (in some languages there is not even an intonational break). However, English nonrestrictive relative clauses in addition appear to show minor syntactic differences from restrictive relative clauses, and there have been many attempts to relate these syntactic differences to the difference in semantic function between the two types of clause. The syntactic differences include: (a) nonrestrictive relatives use a narrower range of relative phrases, being unable to use *that* or phrases where the *wh*-element is embedded and noninitial, so that while *whose mother*, is acceptable as a relative phrase in a nonrestrictive relative, *the mother of whom* is not; (b) nonrestrictive relatives escape weak crossover (leftness condition) effects which restrictive relatives are subject to, giving a distinction between *the man, who his mother loves, arrived yesterday* and *\*the man who his mother loves arrived yesterday*; (c) the nonrestrictive relative seems to be in some sense syntactically disconnected from its head; for example a negative polarity item (like *any*) in the nonrestrictive clause cannot be licensed by the determiner (like *only*) of the head: *\*only the tourists, who have any imagination, go to visit Sicily*. Various explanations have been given of the difference between the two types of clause. One type of account is to place the nonrestrictive relative clause higher in the phrase than the restrictive relative clause (e.g., at a higher bar-level in an X-bar system). An alternative, which is differently realized by different writers, is to say that the nonrestrictive relative is not syntactically a constituent of the noun phrase at some level of syntactic structure; parallel to parentheticals, some authors suggest that a nonrestrictive relative clause is in fact never syntactically part of the sentence which contains it, but that the relation is a discourse one. The issue of the difference between restrictive and nonrestrictive relative clauses, though it has been extensively discussed, is made problematic by several factors, which include the fact that English is one of the few languages ever cited in evidence, and even in English some have claimed that in actual usage the differences are lost; moreover, as Jespersen points out, it is sometimes difficult to decide whether a particular relative clause should be classified as restrictive or nonrestrictive.

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Syntacticians have paid particular attention to the head of the relative clause, in two cases where it is not immediately clear that there is an external head. In free relatives, the issue is whether there is a head or not; in internally headed relatives the issue is whether there is an external head. For free relatives, Bresnan and Grimshaw (1978) argue that the *wh*-phrase is the external head and is not the relative phrase at the front of the relative clause; the relative clause is then interpreted as a contact clause; thus the structure is *I'll buy [NP what [S you're selling]]*. Among their evidence is the fact that the distribution of the free relative matches the category of the *wh*-phrase, that any subject-verb number agreement must involve the *wh*-phrase, and that there is no pied-piping; they argue on the basis of this that there is no movement to create the gap in a free relative (and show that for example in Tok Pisin, where there is no *wh*-movement, a pronoun fills in the gap in the clause). Opposite arguments have also been mounted that the *wh*-phrase is in fact the relative phrase, and that there is *wh*-movement in a free relative. The problem of the head in free relatives has troubled linguistics for a long time; Jespersen discusses alternative proposals by Onions and Sweet (and provides his own proposal, which is similar to that of Bresnan and Grimshaw). Turning now to internally headed relatives, typically these have been analyzed in the generative framework by giving them syntactic structures similar to externally headed relatives; for example, Speas (1990) suggests, discussing internally headed relatives in Navajo, that the internal head is moved at the level of logical form to become the external head. Reinterpretations of relative clauses, particularly in English, continue to offer important evidence for particular theoretical positions. Thus Sag (1997) uses relative clauses to argue for developments in HPSG (Head-driven Phrase Structure Grammar), while Kayne (1994) offers radical reinterpretations of the syntax of relative clauses (and their extraposition), to support his notion of the 'antisymmetry of syntax'.

In summary, relative clauses have provided insights into broader issues in linguistic theory and universal grammar, as well as presenting a range of interesting problems which are specific to the construction. Few of the questions raised by relative clauses have been answered definitively, and it seems likely that relative clauses will continue to offer a rich source of interest for future linguistic research.

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## Resultatives

D. J. Napoli

The term 'predicate' is used in at least two ways in modern linguistics. First, in a sentence like:

John gave another piece of pie to the man at the desk. (1)

*gave* could be called the predicate, since it is the word which denotes the event or the state being spoken about, while *John*, *another piece of pie*, and *the man at the desk* are arguments of this predicate, since they are

role-players or participants in the event (that is, they are assigned a property by way of being participants in an event or state). Another use of the term is to talk of a predicate that consists of an entire verb phrase (or VP), which takes, then, only one argument: the subject of the clause. In that case *gave another piece of pie to the man at the desk* is the predicate in (1) and *John* is its only argument.



With either use of the term, the predicate looked at above is called a primary predicate. Perhaps the defining characteristic of a primary predicate is the presence of a verb; a primary predicate is or contains a verb or is accompanied by a copular (or linking) verb. In (1) *gave*, the event word, is a verb. However:

That new kitten is a naughty scamp. (2)

is not about an event, but about a state, and the words *a naughty scamp* denote the property assigned to *that new kitten*. It is debatable whether the copular *is* in (2) is part of the property or is merely a grammatical formative that carries the tense of the clause. In either case, the predicate here (*is a naughty scamp* or *a naughty scamp*) is a primary predicate because of the presence of *is*.

Not all predicates are primary, however. Phrases that do not contain a verb nor are accompanied by a copular verb can be predicated of other phrases in the sentence:

Jack left her house [furious]. (3)

John ate the meat [raw]. (4)

[Penniless]. Mary was hopeless. (5)

We considered Paul [an asset]. (6)

In all of these sentences it could be argued that there are two predicates, the primary one and a secondary one, in brackets. For example, in (3) it could be argued that John is assigned two properties: one of having left (her house) and one of having been furious. Of course, there is a semantic relationship between the two properties—in (3) John performed the act of leaving (her house) while he was in a state of fury. Likewise, various semantic relationships could be found between the primary and secondary predicates in (4)–(6), where it is important to notice that the secondary predicate can be predicated of a subject (as in (3) and (5)) or of a direct object (DO) (as in (4) and (6)). Some have argued, then, that instead of having two predicates, sentences like (3)–(6), have complex predicates. In (3), for example, John would be assigned the complex property of leaving (her house) while being furious.

If the analysis in which sentences like (3)–(6) have two predicates is accepted, the next question becomes whether these sentences have single clauses, or whether each predicate demands its own clause. For example, is (3) to be analyzed as in:

Jack [[left] [her house] [furious]]. (7)

where the VP has three major constituents: the verb (V), a noun phrase (NP), and an adjective phrase (AP), or as in:

Jack [[left] [her house] [PRO furious]]. (8)

where the VP has three major constituents: the V, an NP, and a so-called small clause? In (8) the small clause consists of an AP and its subject argument,

which is a phonetically null item (an inaudible grammatical item) represented by the term PRO, which in turn is semantically controlled by (that is, interpreted as equivalent to) *Jack*.

This debate stems from a variety of theoretical and empirical concerns. Perhaps the most major concern involves the relationship between syntax and semantics. If the syntax is isomorphic to the semantics, then each predicate should be contained in a separate clause. While mapping from syntax into semantics (or vice versa) would be ideally simplified if these two components of the grammar were isomorphic, it is not logically necessary that they be isomorphic and there is a growing body of linguistic literature that argues that they are far from isomorphic. The empirical concerns, on the other hand, are language specific. In a given language there might be data that are more perspicaciously accounted for with one analysis than with the other.

In spite of all these debatable issues, there is much of interest that can be said for sure about issues of predication. Here, one particular kind of secondary predicate, known as the resultative, will be looked at:

I cut her hair [short]. (9)

In (9) I cut her hair and, as a result, it became short. Some sentences are ambiguous as to whether or not a secondary predicate is resultative:

John made the tea weak. (10)

(10) could describe the situation in which John added water to the tea and the tea became weak (the resultative reading), or another in which John made the tea and it came out weak (the nonresultative reading).

Generally, a transitive sentence with an AP resultative which has the form in (11) can be paraphrased as in (12):

X Verbs Y [Z]. (11)

X causes Y to become Z by Verbing Y. (12)

Here Z stands for the AP resultative.

The semantic interaction between resultatives and Vs shown in (11)–(12) has been accounted for in various ways, not all of which are necessarily discrete from one another, where some propose that the resultative forms a complex predicate with the V (as in Green 1973); some treat the resultative and the V as a single, discontinuous lexical item (like *take ... to task*, as in Bolinger 1971); and some argue that the resultative is an argument of V (as in Carrier and Randall 1988). Many have argued that resultatives are syntactic sisters to V and to the NP they are predicated of (such as McNulty 1988). Some have argued that the semantic difference between secondary predicates like that in (3) (a depictive) and resultatives is paralleled by a syntactic difference (such as McNulty 1988; but see also Demonte 1989; Rapoport 1992). Likewise there has been much discussion over whether or not

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resultatives form small clauses (as in van Voors 1983; Hoekstra 1988).

Another point of contention is whether or not resultatives are limited to particular syntactic categories. Of course, secondary predicates are not verbal (by definition). But beyond that, the question is open. One thorny issue is whether or not resultatives can be prepositional phrases (PPs). Simpson (1983, 1986) explicitly states that resultatives can be of the category AP, NP, or PP (that is, all the major categories other than VP):

I painted the car [<sub>AP</sub> yellow]. (13)

I painted the car [<sub>NP</sub> a pale shade of yellow] (14)

I cooked the meat [<sub>PP</sub> to a cinder]. (15)

Many agree with Simpson in admitting PPs as resultatives. For example, in Hoekstra (1988), where Dutch is compared to English, every example of a resultative predicating of an internal argument of the primary predicate is a PP. Pustejovsky (1989) argues that any phrase which can denote a state can be a resultative, including PP. Van Voorst (1983) argues for Dutch that directional PPs are predicates inside small clauses, occupying the same syntactic position resultative APs occupy. All the data and arguments presented by van Voorst are consistent with the analysis of the directional PPs as resultatives.

An explicit claim that PPs cannot be resultatives is found in Rapoport (1992: fn. 11), who says the PP in examples like (5) modifies the V rather than being predicated of an NP. It would seem, moreover, that some works embody the implicit claim that PPs cannot be resultatives. For example, some say that particular languages Jack resultatives, including Green (1973) for French, Merlo (1986, 1988) for Italian, and Rapoport (1986) for Hebrew. But if PPs are admitted as resultatives, these languages surely have resultatives. This point is re-examined below.

Below are listed some of the arguments for including PP among resultative types. Via these arguments the major syntactic diagnostics for recognizing resultatives will become evident.

First, PPs such as the following will be dealt with:

She scrubbed the dirt {[out of her skirt]/  
[from her skirt]/[off the step]/[away]}. (16)

I slapped him {[into a stupor]/[out of his hysteria]}. (17)

(For evidence that *away* is a PP, see Jackendoff 1973.) In these examples the PPs are directional or spatial with a verb that is not inherently a motion verb (as in (16)), or they are state PPs (as in (17)). The discussion below will be limited to these sorts of PPs. In particular, examples with locational PPs where the V is a motion verb (such as *go*, *run*, *dance*, *fly*) will not be discussed, since the matter of whether or not such PPs with such Vs can truly be predicates is much more complex.

First, consider their sense. The paraphrase test in (10)–(12) cannot be used as it now stands, since the Z of (11) would not be an AP in (16)–(17), but a PP, and most PPs are not grammatical as predicates in the position immediately following a form of the verb *become* (a fact that has nothing to do with whether or not they can be resultatives or any other kind of predicate). Instead, in each instance it is necessary to ask whether the PP describes a state or location that is predicated of the DO and that is the result of the primary predicate's action on the DO. On that basis locational PPs like those in (16) are at least borderline resultatives semantically and are worthy of further testing, and state PPs like those in (17) seem to be clear resultatives.

Second, many have claimed that there are restrictions on which element can be the subject of a resultative. Some have argued that the subject of a resultative must be the affected argument of the V (in the sense of Tenny 1987) or a patient of the V (as in Simpson 1986). Simpson (1983) claims that resultatives in English are predicated of deep objects only. If Simpson's claim were correct, a diagnostic for resultatives could be formulated immediately: resultatives should not be predicated of objects of P. And, in fact, they cannot. (18)–(19) form minimal pairs:

I slapped her [silly]. (18)

\*I slapped at her [silly]. (19)

PPs behave precisely as other resultatives here:

\*She scrubbed at the dirt {[out of her skirt]/  
[from her skirt]/[off the step]/[away]}. (cf. (16)) (20)

\*I slapped at him {[into a stupor]/  
[out of his hysteria]}. (cf. (17)) (21)

A caveat is in order here: Not all PPs that concern the endpoint of the V's action are predicates, however; some are degree modifiers of the action.

I beat him [to a pulp]. (22)

I beat him [to the point of exhaustion]. (23)

The PP in (22) must be a resultative, whereas that in (23) can be a modifier of the V (and, perhaps ambiguously a resultative, as well). In (22) the PP can be predicated only of the DO. But in (23) it is unclear whether the subject or the DO or even the people watching become exhausted; the PP tells us that the beating went on too long—it is a degree modifier of the V. Accordingly, if all nominals that are potential arguments of the PPs are removed, the predicative PP in (22) becomes ungrammatical, but the modifier PP in (23) is still acceptable:

\*The fight went on [to a pulp]. (24)

The fight went on [to the point of exhaustion]. (25)

Third, another diagnostic based on Simpson's claim also involves assuming the validity of the work

in Burzio (1986), who argues that superficially intransitive verbs fall into two classes, those that have deep subjects and those that have deep objects which move into subject position (called ergatives or unaccusatives). If Burzio is correct, Simpson's generalization above can be accepted, and this diagnostic formed: resultatives should be able to be predicated of a subject with an unaccusative V only. Of course, with intransitive sentences that contain a resultative AP the pattern of paraphrase given above in (11)–(12) will not hold. Instead, a semantic correlation of the following type is looked for:

X Verbs [Z]. (26)

X Verbs to the point of becoming Z. (27)

(Again, if Z is a PP and not an AP, this paraphrase test will not hold.) This seems true: in (28)–(31) the contrast between the unaccusatives *bleach* and *fry* and the intransitives *cry* and *drink* can be seen. Here the resultatives are APs (where an asterisk indicates that no good resultative reading is available):

The shirt bleached [white] in the sun. (28)  
(cf. The sun bleached the shirt [white].)

The bacon fried [crisp]. (29)  
(cf. Let's fry the bacon [crisp].)

\*The boy cried [sick]. (30)

\*The boy drank [sick]. (31)

The same contrast occurs with resultatives that are PPs:

The shirt bleached [to the purest white]. (cf. (28)) (32)

The bacon fried [to a crisp]. (cf. (29)) (33)

\*The boy cried [into a stupor]. (cf. (30)) (34)

\*The boy drank [out of his mind]. (cf. (31)) (35)

The correlation between deep transitivity and the possibility of a resultative is so strong that fake objects can be found, often reflexive objects (Simpson 1983), with otherwise intransitive Vs, where the fake object and the resultative must both appear:

The boy cried his eyes [blind]. (36)

The boy cried himself [sick]. (cf. (30))

The boy drank the pool [dry]. (37)

The boy drank himself [sick]. (cf. (31))

These objects are fake in that they are neither subcategorized for by the primary predicate nor are they assigned a theta role by (that is, nor are they arguments of) the primary predicate. Once more, the correlation holds also for PP resultatives:

The boy cried his eyes [out]. (38)

The boy cried himself [into a stupor]. (cf. (34))

The boy drank the pool [down to the bottom]. (39)

The boy drank himself [out of his mind]. (cf. (35))

By three diagnostics, then, the relevant PPs in (16) and following examples (both state and locational

with nonmotion verbs) are resultatives: they have the sense of resultatives; they are predicated of DOs but not objects of prepositions (OPs); they are predicated of surface subjects only of unaccusative Vs. These three diagnostics are the most common ways of identifying resultatives. If these diagnostics and the above arguments are valid, then not only can PPs be resultatives, but a variety of languages that have been claimed not to have resultatives, such as the Romance languages, certainly do. In (40), for example, there is a PP resultative in Italian:

Ho intrecciato i fiori [a forma di ghirlanda]. (40)  
'I wove the flowers [into a garland].'

In fact, the Romance languages have AP resultatives, as well as PP ones, where a particular semantic restriction holds, as is seen by looking at Italian. Many of the examples below have grammatical counterparts in French, Spanish, Portuguese, Catalan, and probably throughout the Romance languages.

It seems that in a sentence with a resultative AP, the primary predicate must be interpreted as focusing on the endpoint of the activity denoted by that predicate. Resultative APs, then, can occur in sentences in which the primary predicate is one with an instantaneous effect on the DO, such as:

Quel macellaio taglia le carni [sottili]. (41)  
'That butcher cuts meats [thin].'

Mia figlia ha cucito la gonna [troppo stretta].  
'My daughter sewed the skirt [too tight].'

If the effect of the primary predicate on the DO is not instantaneous, but achieved only gradually, via duration or repetition, an AP resultative is allowed only if it is somehow emphasized so that the addressee's attention is drawn to the endpoint of the event of the primary predicate. Thus, for example, in each pair of sentences in (42) the first is not acceptable, but the second is fine or at least much better than the first for many speakers:

\*Ho stirato la camicia [piatta]. (42a)  
'I ironed the shirt [flat].'

Ho stirato la camicia [piatta piatta].  
'I ironed the shirt [very flat].'

?\*Hanno riscaldato l'acqua [bollente]. (42b)  
'They heated the water [boiling].'

Hanno riscaldato l'acqua [tanto calda che non ci si poteva entrare].  
'They heated the water [so hot that no one could get in].'

?\*Ha strappato la lettera [fine]. (42c)  
'He ripped up the letter [fine].' (in small pieces)

Ha strappato la lettera [fine fine].  
'He ripped up the letter [very fine].'

?Abbiamo pettinato i capelli [lisci]. (42d)  
'We combed the hair [smooth].'

Abbiamo pettinato i capelli [lisci come seta].  
'We combed the hair [smooth like silk].'

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- ?Li abbiamo scoloriti [bianchi]. (42e)  
 'We bleached them [white].'  
 Li abbiamo scoloriti [quasi, ma non perfettamente,  
 bianchi].  
 We bleached them [almost, but not perfectly, white].'

However, while being interpretable as focusing on the endpoint of its activity is necessary for the V, it is not sufficient:

- \*Ho macchiato la camicia [rossa]. (43)  
 'I stained the shirt [red].'

The outcome, then, is a strategy for interpreting sentences that have resultative APs. But Vs will have to be marked in the lexicon as to whether or not they allow resultatives. That is, resultative arguments (as opposed to resultatives with fake object sentences, which are not arguments—as in (36)–(39) above, which have no grammatical counterpart in Italian or any of the Romance languages) will appear in the predicate-argument structure and in the subcategorization frame of a verb. For those Vs which allow resultatives, the ease with which the V can be read as focusing on the endpoint of its activity in a given sentence in a given pragmatic context (as shown below) determines the ease with which a sentence with a resultative will be interpreted.

It is now time to consider how pragmatic context enters. A given activity can have an instantaneous effect on one object but not on a different object, simply because of the physical nature of the objects and not for any grammatical reason. For example, if we hammer on metal, we do not expect an instantaneous effect, but if we hammer on tin foil, we do. A resultative AP turns out to be better in the sentence describing the second event than in that describing the first. Alternatively, a given object might be instantaneously affected by one activity but not by another. So a sentence about a machine that can flatten metal in an instant is more acceptable than a sentence in which a person is hammering on metal. The grammaticality judgments marked below are common to the speech of many, although the contrasts are not always strong.

- \*Gianni ha martellato il metallo [piatto]. (44)  
 'Gianni hammered the metal [flat].'  
 ?Gianni ha martellato la carta stagnola [piatta].  
 'Gianni hammered the tin foil [flat].'  
 ?Quella pressa idraulica ha {pestato / pressato} il  
 metallo piatto (subito subito).  
 'That hydraulic press {smashed / pressed} the metal  
 flat (in an instant).'

Likewise, in a situational context in which the addressee's point of attention is naturally the endpoint of an activity, a V whose effect is felt only after some duration of the activity can nevertheless cooccur with a resultative:

- Quell'anitra. l'hai cucinata [saporita]. (45)  
 'That duck, you cooked it [tasty].'

- (Context: a debate over whether the shirt in question got ironed flat or into pleats.) (46)  
 —Ho stirato la camicia [piatta piatta].  
 'I ironed the shirt [very flat].  
 —No, hai stirato la camicia [pieghettata].  
 'No, you ironed the shirt [pleated].'

(The response in (46) is the example of interest here. Many people find it acceptable.)

Similarly, imperatives can set up an endpoint-focused context. That is, when we order someone to beat eggs, we often do not care how they get to the desired result so long as they do. Quite generally, resultatives with imperatives about cooking are considered more acceptable than their statement counterparts:

- Sbatti le uova [cremose]. 'Beat the eggs [creamy].' (47)  
 (cf. ?\*Maria sbatte le uova [cremose].  
 'Maria is beating the eggs [creamy].')  
 'Macinatele [fini]. 'Grind them [fine].'  
 (cf. ?Le avete macinate [fini].  
 'You have ground them [fine].')

Also, if the V is of low information with respect to the type and manner of activity, where the major information of the V is the endpoint of the activity, resultative APs are acceptable, even if the activity has to be iterative or durative before the desired effect on the object is achieved. *Caricare* 'load' is such a V. Material can be loaded onto or into a location by doing many different types of actions (in contrast to ironing, for example, which involves a highly specified action). Resultatives are easily allowed with this V, where intensification of the AP makes it that much more colloquial:

- Gli operai hanno caricato il camion [pieno]. (48a)  
 'The workers loaded the truck [full].'  
 Gli operai hanno caricato il camion (48b)  
 [pieno al massimo].  
 'The workers loaded the truck [full to the brim].'

In sum, it appears that AP resultatives in Italian are more readily accepted: (a) with instantaneous-effect Vs (41); (b) if modified or intensified (42); (c) with instantaneous effect situations (44); (d) in situations that focus the addressee's attention on the endpoint of an activity (45)–(46); (e) with certain imperatives (47); and (f) with Vs that naturally focus on the endpoint of the activity they denote (48). Given that resultatives concern the endpoint of the primary predicate's action by definition, the interpretation strategy that exists in Italian is natural. Other languages may have somewhat different restrictions on the types of sentences that can occur with resultatives, but, presumably, all such restrictions should follow either from the nature of resultatives themselves or from independent grammatical factors in the language.

Finally, it is worth noting that Levin and Rapoport (1988) have argued that the ability of a language to take a resultative follows from the existence or not of



a process of lexical subordination in the language (a concept similar to lexical conflation in Talmy 1975, 1985). Lexical subordination is also claimed to be responsible for at least two other grammatical phenomena. One is the use of a manner-of-movement verb to show change of location. In English, for example, the verb *float* can be used to show simple manner of movement (as in (49)), or manner plus change of location (as in (50)):

The bottle floated in the cave. (49)

The bottle floated into the cave. (50)

The second is the use of a manner-of-speaking verb with a DO that expresses the thing spoken (Zwicky 1971, Mufwene 1978), as in:

She mumbled her adoration. (51)

Significantly, Italian exhibits both phenomena:

*Il fiume serpeggia al mare.* (52)

'The river snakes (its way) to the sea.'

*Carolina ha sussurato la sua ammirazione per il poeta.* (53)

'Carolina whispered her admiration for the poet.'

Thus, it may well be that the process of lexical subordination is the cornerstone for the resultative construction.

While this article gives a brief overview of some of the major theoretical debates involving the analysis of resultatives and of some of the more characteristic limitations on the data in Romance languages, the analysis of resultatives is only beginning to receive wide attention. The debates are bound to change, perhaps drastically, over the next few years, as additional languages are examined.

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## Sentence Types and Clause Subordination

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There are numerous dimensions on which sentences can be classified, but as a technical term of grammar 'type' is used specifically for that dimension which correlates with the use of sentences for the performance of different kinds of speech act—of acts with different illocutionary force. The three types which

recur most frequently in the world's languages are declarative, interrogative, and imperative, which correlate respectively with the speech act categories statement, inquiry, and directive (a cover term for requests, commands, orders, instructions, and the like). Examples from English are given in (1):

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	Sentence type	Characteristic use	(1)
(a) It is raining again.	Declarative	Statement	
(b) What do you want?	Interrogative	Inquiry	
(c) Stand still.	Imperative	Directive	

The correlation between the sentence types and the speech act categories is, however, by no means one-to-one. For example, the declarative *Passengers are requested to remain seated until the plane has come to a complete standstill* would typically be used as a directive (a request), and so would the interrogative *Would you be good enough to pass me my towel?*; on the other hand, the imperative *Sleep well* would generally be used not to issue a directive but to express a wish (for there are many other kinds of speech act than statement, inquiry, and directive). It is for this reason that the heading in the third column of (1) above is 'characteristic use': declaratives are not invariably used as statements, but generally, characteristically, they are—and analogously for the other types.

When a clause is subordinated it ceases—again, characteristically but not invariably—to carry its own illocutionary force. Compare (1a), for example, with:

Kim says it is raining again. (2)

If I utter (1a) on its own I state (normally) that it is raining again, but when I subordinate it within a larger clause, as in (2), I do not: what I state in uttering (2) is that Kim says it is raining again, not that it is raining again. Nevertheless, some at least of the type contrasts, e.g., that between declaratives and interrogatives, are also found in subordinate clauses, as in (3) (where material in square brackets is relevant context but not part of the expression being analyzed):

- |  |                 |
|--|-----------------|
| (a) [She doesn't know] that it is raining again. | Declarative (3) |
| (b) [She doesn't know] what you want.            | Interrogative   |

There are thus significant links between the two major topics covered in this article, and the treatment of clause subordination will examine the correlation between subordination and loss of illocutionary force and the applicability of the type categories to subordinate constructions.

### 1. Sentence Types

#### 1.1 Sentence Type as the Grammaticalization of Illocutionary Force

It was noted above that the correlation between sentence type and speech act (illocutionary force) is complex, rather than one-to-one, and precisely for this reason it is important to keep the two sets of categories conceptually and terminologically distinct. Traditional grammars often fail to do this, so that the terms 'statement,' 'question,' and 'command' are commonly

used as the names of the major sentence types; modern grammars generally use distinct terms for sentence type and speech act in the case of the pairs declarative/statement and imperative/directive, but it is still very common to find question applied instead of interrogative (or as an alternative to it) to a sentence type as well as to a speech act category, a usage with the potential for considerable confusion (for discussion of the contrast and relation between questions and interrogatives, see Huddleston 1995). This article will maintain a sharp distinction between the terms for sentence types (categories of grammar) and the terms for illocutionary acts (categories of use, pragmatic categories). It will, moreover, prefer 'inquiry' to question as a label for the most characteristic use of interrogatives: an inquiry involves asking the addressee a question, but this is not the only thing one can do in expressing a question (cf. Lyons 1977: ch. 16). This usage will free the term question for the semantic level, for a category defined by its logical relation to a set of answers. Question in this sense is relevant to the interpretation of subordinate interrogatives such as [*She inadvertently revealed*] *where he was* (i.e., the answer to the question 'Where was he?'), where there is no implication that any act of inquiry took place.

The sentence types, like other grammatical categories found in more than one language, need to be defined at two levels: the language-particular level and the general level (see Lyons 1966 for the origin of this distinction, and Palmer 1986: 2–7, 23–33 for its application to the present topic). At the former level the concern is with the grammatical properties—matters of form—which distinguish one category from another in the particular language being described, English, French, Urdu or whatever it might be. Thus as a first approximation for English one may note that (1a) and (b) are distinguished by the order of the subject and the first verb, while (c) differs from both of them in having no subject. At the general level the concern is with what is common to a given category across different languages, and it is here that the correlation with the speech act categories is invoked. Thus a general definition of the term declarative is that it applies to a grammatically distinct class of sentence (or clause) whose members are characteristically used to make statements—and analogously for interrogative and imperative. *Sleep well* belongs by virtue of its form, its structure, to the same grammatical category as *Stand still*, *Open the door*, *Go away*, etc., and this category satisfies the general definition of imperative because the majority of its members would typically be used as directives.

Although the general definitions are based, unlike the language-particular ones, on properties of use, they nevertheless incorporate a condition of 'grammaticalization', i.e., of grammatical distinctiveness. The speech act or illocutionary force categories of statement, inquiry, and directive are grammaticalized

in English precisely because there are distinct grammatical constructions associated with them, but the category of offer, say, is not. Such examples as *Would you like another sherry?* (interrogative), *Have another sherry* (imperative), *There's some more sherry here if you'd like some* (declarative) could all naturally be used in an appropriate context with the illocutionary force of an offer, but the interpretation as offers arises principally from the 'lexical' content (notably *sherry, have/like*): one does not find any special grammatical features associated with offers in contrast to other speech acts, and there will accordingly be no question of recognizing 'offerative' as a sentence type in English. This is an uncontroversial example, but there are places where it is less clear whether the condition of grammaticalization is satisfied, and consequently differences among grammarians concerning the precise set of sentence types in a given language.

### 1.2 'Type' as a Category of the Clause rather than the Sentence

Before further investigation of the relation between grammatical type and illocutionary force, it will be helpful to clarify the domain of the type category. The distinction that is commonly drawn between sentence and clause may be explained by reference to the following example:

- (a) Kim wrote the letter. (4)
- (b) Kim wrote the letter, but she did not post it.
- (c) He didn't know Kim wrote the letter.

In all three *Kim wrote the letter* is a clause—by virtue of having a clausal structure (*Kim* is subject, wrote is predicator, and *the letter* is object, these being three of the major elements of clause structure). In (a) the clause is also a sentence—because it is not part of any larger syntactic construction; in (b) and (c), by contrast, *Kim wrote the letter* is not a sentence, precisely because it is part of a larger syntactic construction (in (b) it is coordinated, in (c) subordinated). Within this framework it is to the clause rather than the sentence that the type dimension applies. *Kim wrote the letter* is a declarative clause, because it has the structure of one—it lacks the special features of interrogative *Did Kim write the letter?*, namely the obligatory auxiliary and the auxiliary-subject order (or the special interrogative conjunction in the subordinate interrogative *whether Kim wrote the letter*). Example (4b) is not appropriately classified as a declarative sentence because it is the separate clauses that select for type, not the sentence as a whole. This is evident from the fact that different types can be coordinated in a single sentence: *Kim wrote the letter but did she post it?* (declarative + interrogative). *Come around six or is that too early?* (imperative + interrogative). *It's your fault and don't try to deny it* (declarative + imperative), and so on. In (4c) one can replace the subordinate declarative *Kim wrote the*

*letter* by the interrogative *whether Kim wrote the letter* but this would not produce an interrogative sentence: the resulting sentence (*He didn't know whether Kim wrote the letter*) has the form of a declarative clause. For these reasons, this article will henceforth speak of 'clause type' rather than 'sentence type.'

Notice in this connection that the domain for the type categories may differ from that for the illocutionary ones. It has already been seen that type may apply to subordinate clauses whereas illocutionary force normally does not, but there may also be differences in coordinative constructions, as in (5):

- Have you moved or are you about to move? (5)

This is taken from a bank statement, where it is followed by *If so, please phone the number below*: in this context it is clearly a single inquiry (asking a question whose answer is 'yes' if you either have moved or are about to move), although it consists grammatically of two interrogatives. It differs from such examples as *When is she going or can't you say?*, where there are two questions asked: this contrast in domain reinforces the need to distinguish grammatical interrogative from semantic question or pragmatic inquiry.

### 1.3 Markers of Clause Type and of Illocutionary Force

It has been emphasized that clause type does not fully determine illocutionary force, for there is not a one-to-one relation between them. Clause type is nevertheless the primary factor determining illocutionary force in that, other things being equal, a declarative will be used to make a statement, an imperative to issue a directive, and so on. The point is, however, that other things are not always equal—that other factors may cause the utterance to have an illocutionary force different from that which its clause type would initially lead one to expect.

Two somewhat different cases where this occurs are illustrated in (6) and (7):

- Must you have the radio on so loud? (6)

- I promise not to tell anyone what you have just done. (7)

In uttering (6) in an appropriate context I might well be telling you to turn the radio down, i.e., issuing a directive, even though the type is interrogative rather than imperative. The literal meaning is that of a question concerning the necessity for the radio to be on so loud, but with the readily available assumption that the answer is 'no' and that I am asking because I do not like it so loud the utterance will convey, indirectly, that I want you to turn it down: it is accordingly a clear instance of what is known as an 'indirect speech act.'

An utterance of (7) is most likely to be intended and construed as a promise, but it is not desirable to say that it belongs to a special corresponding clause type ('promissive,' say): it is simply declarative. This example differs from the last in that the conveyed force

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here derives from the literal meaning. The promise force comes from the fact that it contains the verb *promise* used 'performatively,' i.e., in the performance of the illocutionary act it denotes. (Contrast the non-performative use of the same verb in such examples as *It was wrong of you to promise to go*; I don't make a promise by saying this. The reason why nevertheless it is not desirable to postulate a promissive clause type here is that the promise force is signaled by quite different linguistic means than the inquiry force of *What do you want?*, the directive force of *Stand still*, and so on. This is evident from such correspondences as one finds in (8) and (9):

- |                             |     |
|-----------------------------|-----|
| (a) I try to help.          | (8) |
| (b) Do you try to help?     |     |
| (c) Try to help.            |     |
| (a) I promise to help.      | (9) |
| (b) Do you promise to help? |     |
| (c) Promise to help.        |     |

The relation of (a) to (b) to (c) is the same in both sets, and it is for this reason that one can say that in both of them (a) is declarative, (b) interrogative, (c) imperative; the fact that (9a) could be used to make a promise whereas (8a) would normally be simply a statement follows from the lexical-semantic properties of the verb *promise* (vs. *try*), not from any difference in grammatical construction.

It is not always easy to draw a sharp distinction between direct and indirect speech acts, and indeed some writers define indirect speech acts in such a way as to cover (7) as well as (6). Explication of the concept indirect speech act is, however, a task for pragmatic theory rather than grammatical theory: for present purposes (6) and (7) can be treated together as cases where various factors override clause type in the determination of illocutionary force. The issue here is thus the distinction between those linguistic features which are markers of clause type and those which, although relevant to illocutionary force, are not. This distinction too is not always easy to draw, and significant differences in the description of clause type in different grammars of the same language are attributable to differences in the way it is drawn. The major guiding principle will be that the clause types constitute a grammatical system (cf. Sadock and Zwicky 1985: 148–49). This is to say that the various types are mutually exclusive: no (unambiguous) clause can belong to more than one type. This criterion has already been used to argue that (8a) and (9a) do not belong to different clause types: the presence of *promise* does not mark a distinct clause type because it can occur in any of the three major types, as shown in (9). The criterion can likewise be used to show that in the following set (11) belongs to a different clause type than the declarative (10), whereas (12) does not:

- |                               |                  |
|-------------------------------|------------------|
| She gave a great performance. | Declarative (10) |
|-------------------------------|------------------|

What a great performance she gave! Exclamative (11)

She did give a great performance. Declarative (12)

Example (11) differs from (10) by virtue of the special exclamative phrase *What a great performance*, and such phrases cannot occur in the other major types recognized, imperative and interrogative. Thus *\*give what a great performance* is not a well-formed imperative, and (the rather marginal) *What a great performance did she give* is simply a variant of (11), not an interrogative clause. The initial phrase therefore puts (11) in a category that is mutually exclusive with imperatives, interrogatives, and declaratives, and accordingly (11) is assigned to a distinct clause type, exclamative. The difference between (12) and (10) is not like this. Example (12) contains the emphatic marker *do*, but the contrast between unmarked and emphatic is found also in imperatives (*give a great performance* vs. *do give a great performance*) and in interrogatives (*Who gave a great performance?* vs. *Who did give a great performance?*). Emphatic *do* is therefore not to be regarded as a marker of clause type: it belongs on a different dimension of clause structure. Another example is provided by *please*: although it serves to signal request force, it is not a clause type marker as it occurs not just in imperatives but also in interrogatives (*Could you please pass the salt?*) and declaratives (*You will please ensure that this does not happen again*).

The major markers of clause type that are found in English and/or other languages are:

- verb-form—contrast the different inflectional forms of the verb *be* in declarative *You are generous* and imperative *Be generous*;
- order—contrast the linear order of subject and verb in declarative *She is ill* and interrogative *Is she ill?*;
- special words or classes of word, for example, interrogative *Who has finished?* is distinguished from declarative *Someone has finished* by the interrogative word *who*;
- omission of elements—*Leave after lunch*, for example, is marked as imperative by the absence of the subject, an element that is normally obligatory in declarative and interrogative clauses.

One further linguistic feature that is commonly included in the set of clause type markers is intonation, but the view taken here (following, for example, Lyons 1981: 137–38; Palmer 1986: 6, 30–31) is that intonation is better regarded as one of the features that can override clause type in the determination of illocutionary force than as itself a marker of clause type. The issue arises particularly in the case of inquiries—the area where the single term question is widely used for both form and meaning. In many languages inquiries are characterized by rising intonation, and this may be the only feature distinguishing them from statements. Thus *You have seen it* could be



spoken with rising intonation to ask the question 'Have you seen it?' There are nevertheless good reasons for saying that the clause is declarative, not interrogative.

It has been emphasized that clause types are grammatical categories and hence the basis for grouping items together in the same category must be shared grammatical properties, not likeness of illocutionary force. Yet there are no grammatical grounds for regarding rising intonation as comparable to the inverted order that marks *Have you seen it?* as interrogative. Consider, for example, the distribution of various items such as *ever* (in the sense 'at any time'). Such items are restricted to 'nonaffirmative' contexts, mainly negatives, conditionals—and interrogatives. Thus one can say *None of you have ever been to Paris; if you have ever been to Paris; Have you ever been to Paris?*, but not affirmative *\*You have ever been to Paris. You have been to Paris* can be spoken with rising intonation conveying inquiry force, but it is still not possible to insert *ever*: the intonation, unlike inverted order, does not create a grammatically nonaffirmative context. A further point is that rising intonation and inverted order may differ in the scope or domain of the inquiry they signal. This can be illustrated with examples like *I don't suppose you've seen my keys* ↑ or *Surely you're not going to agree* ↑ (where ↑ indicates rising intonation). The scope of the inquiry in the first is simply the subordinate clause: one understands it as 'Have you seen my keys?' not 'Don't I suppose you have seen my keys?' And similarly in the second the initial adverb is outside the scope of the inquiry: *surely* reinforces the 'conductive' nature of the inquiry (indicating a belief that the answer should surely be negative); the inverted-order construction *Are/Aren't you going to agree?* would not accept *surely* with this function. It should also be noted that empirical studies show that the correlation between rising intonation and inquiries is not nearly as close as one might expect on the basis of intuitions about constructed examples taken out of context (see Geluykens 1988).

A final argument against treating rising intonation as a marker of interrogative clause type is that the inquiry it signals can be of the 'echo' kind, and echo-inquiries can combine with any of the grammatical clause types. Suppose, for example, you utter the declarative *She hadn't enough money*: I might repeat your words with an intonation conveying something like 'Are you really telling me she hadn't enough money?' Or I might echo your imperative *Be patient?*, with rising intonation conveying 'Are you really telling me to be patient?' Similarly interrogative *Is it ready?* might be echoed so as to convey 'Are you really asking me whether it is ready?' and so on. By the guiding principle the echo thus cannot itself be a clause type: it is not in contrast with the clause types declarative, imperative, interrogative, but combines with any. It provides a very general instance of the

situation where clause type is overridden in the determination of illocutionary force: the echo *Be patient?*, for example, is not a directive. The echo inquiry is certainly a rather special kind of inquiry, but it is nevertheless an inquiry: it therefore provides strong grounds for the insistence on the distinction between categories of form and categories of meaning/use, as it shows that a noninterrogative can be used with inquiry force. It is, moreover, extremely doubtful whether an echo inquiry can always be distinguished simply by its prosody from an ordinary inquiry.

With this distinction between markers of clause type and (other) marks of illocutionary force established, the clause types found in main clauses can now be reviewed. The primary focus will be on English; remarks on other languages will draw heavily on the admirable survey in Sadock and Zwicky 1985 (see also Schneider, et al. 1982; Ultan 1978; and—for both sections—Comrie 1987). Attention will be confined to the four major types, leaving aside such minor constructions as are illustrated in *Would I had never set eyes on him!*; *if only I had more time!*; *God bless you*, etc. (For a more detailed description within the framework sketched above, see Huddleston and Pullum, in press: Chapter 10.)

#### 1.4 Declaratives

In English declarative is the unmarked term in the system: a clause is declarative if it lacks the special features which mark the other terms. Except where there are overriding factors of form, prosody, or context, an utterance of a declarative main clause will have the force of a statement. Several such factors have already been mentioned: the performative use of an illocutionary verb, as in (9a), to signal whatever illocutionary act is denoted by that verb, *please* to convey directive force, rising intonation to signal an inquiry.

It is not always the case that the declarative is unmarked in the sense of simply lacking the special features of other types: in some languages it has special features of its own. This arises particularly where clause types are distinguished by verb-forms (as in Greenlandic or Blackfoot) or contrasting particles (as in Hidatsa, where in fact there is not a single declarative particle, but a set of five, yielding distinct subtypes).

#### 1.5 Imperatives

The major distinctive features of English imperatives are: (a) the verb appears in the base form (e.g., *be* in *You be careful* in contrast to present tense *are* in declarative *You are careful*); (b) the subject is an optional element, usually omitted, being recoverable from the context (as in *Be careful*); (c) *do* is required in negatives and emphatic positives before any verb, whereas in declaratives it does not occur with *be* or certain uses of *have* (compare declarative *You aren't*

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late with imperative *Don't be late*). The subject (overt or covert) is usually 2nd person, but a 3rd person subject is also possible, as in *Somebody open the window*; pragmatically, however, such subjects are normally understood as applying within the domain of the addressees, so that one understands 'somebody among you.'

One special subtype is the *let*-imperative, as in (13):

Let's be generous. (13)

The traditional name for (13) is '1st person (plural) imperative,' but this reflects the meaning rather than the grammatical form: the *let* has lost the 'allow' meaning of the ordinary imperative (*Please let us come with you*, but it still behaves as a verb (as is evident from its occurrence with *do* in emphatic *Do let's be generous* or negative *Don't let's go*), and clearly 's' is not its subject. A genuine 1st person imperative is found in such a language as French, where (13) translates as *soyons généreux*, with *soyons* a 1st person plural imperative verb-form, contrasting with 2nd person *soyez*.

It seems that all languages have an imperative category. Typically the grammatical markers are similar to those given for English. The subject is commonly missing (in some languages obligatorily so). The verb-form is often different from, and morphologically simpler than, that used in declaratives and interrogatives. Many languages indeed (e.g., French, as noted above) have a specifically imperative verb-form. The term 'imperative' is thus standardly used both for a verbal category and for a clausal category. As a verbal category, it is a term in the system of mood, typically contrasting with such other moods as indicative and subjunctive; as a clausal category, it is a term in the system of type, typically contrasting with declarative and interrogative. This dual usage requires that the term be applied with some caution, for it is important to emphasize that imperative clauses are not necessarily marked as such by an imperative verb-form. Traditional grammars of English analyze the *be* of an imperative clause like *Be careful* as an imperative verb-form (contrasting with indicative *are*), but the *be* here is not inflectionally distinct from that of [*It is important*] *to be careful* or that of [*It is essential*] *that he be careful*: no verb in English has different forms in these three constructions, and hence there is no justification for saying that they differ with respect to verb inflection. Rather, there is a single inflectional form appearing in a range of syntactically distinguishable constructions. This form (here called the 'base form,' as it is identical with the lexical stem of the verb), is one of the markers of the imperative clause type in English, but there is no place in the grammar of English for an imperative verb category.

It is also common for imperatives to differ from declaratives with respect to the treatment of negation. In English the differences are fairly minor (the subject

usually follows the *don't*, as in *Don't you touch it!*, and *do* is used more extensively, as noted above), but often they are significantly greater, with separate negative markers in the two types. The constructions associated with positive and negative directives may be so different (e.g., involving different verb-forms, as in Greenlandic or Latin) that they need to be assigned to distinct clause types, imperative for the positive, prohibitive for the negative.

Utterances with imperative form have directive force except where other factors override the clause type. Two such cases (besides the echo-inquiry mentioned above) involve wishes and coordination: (a) the imperative is conventionally used for a quite limited range of wishes, such as *Sleep well*; *Get well soon*; *Have a good weekend*, etc. (these involve events that are not normally conceived of as being within the control of the addressee(s), and hence a directive interpretation is blocked); and (b) when an imperative is coordinated with another clause it may be pragmatically equivalent to a conditional, e.g. *Do that again and you'll regret it* 'If you do that again, you'll regret it.' Although there is directive force here (I am likely to be threateningly telling you not to *do that* again), it is conveyed by the whole coordinative construction: there is no force of any kind attaching to the imperative clause itself. It should also be noted that imperatives are quite naturally used in making challenges (*Catch me if you can*), giving permission (*Help yourself if you need any more*), or merely indicating acceptance (*Go ahead if you insist [but I think; you're making a mistake]*): it is questionable, at best, whether these can be properly subsumed under the concept of directive. (On this and other issues concerning the imperative construction, see the excellent study in Davies 1986.)

### 1.6 Interrogatives

English has two subtypes of interrogative, 'closed' and 'open' (14) and (15):

- |                             |        |      |
|-----------------------------|--------|------|
| (a) Are they dead?          | Closed | (14) |
| (b) Are they alive or dead? |        |      |

- |               |      |      |
|---------------|------|------|
| Who are they? | Open | (15) |
|---------------|------|------|

The name 'closed subtype' derives from the fact that such clauses are characteristically used to ask questions with a closed set of answers, either 'yes' and 'no,' as in (14a), or a set given in an *or*-coordination, e.g., 'alive' and 'dead' in (14b). Grammatically, they are marked (in main clauses) by verb-subject order. A special feature of English is that only a small number of verbs, mainly auxiliaries, can precede the subject: compare *Can she swim?* with \**Swims she?* Where the corresponding declarative contains no such verb, *do* is added to satisfy this syntactic requirement: *Does she swim?* Since the unmarked order is subject-verb, many grammars describe the interrogative in terms of a syntactic process of subject-auxiliary inversion.

(There are problems associated with this term since the main verb *be*, and also *have* under certain conditions, likewise undergo inversion; for this reason some grammars (e.g., Quirk, et al. 1985) use the English-specific term 'operator' rather than the general term 'auxiliary' for the class of verbs in question.)

Examples (14a) and (b) are commonly called respectively 'yes/no interrogative' and 'alternative interrogative' (or, more often, 'yes/no question' and 'alternative question'), with no broader term covering them both. The former is very much more frequent than the latter, and a common practice is therefore to present the major division within interrogatives as being between the yes/no subtype (14a) and the open subtype (15), with alternatives like (14b) introduced later (if at all) as a relatively minor third category. There can be no doubt, however, that from a grammatical point of view (14a) and (b) do belong together in a single class opposed to (15): thus a more general category of closed interrogative is required to cover them both. They both lack the interrogative phrase of the open type; as main clauses they both have inversion, and as subordinate clauses they are both introduced by *whether* or *if* ([*He doesn't know*] *whether they are dead/whether they are alive or dead*). It is arguable, moreover, that they should not even be regarded as distinct subtypes of closed interrogative, that the difference between them is not strictly a matter of clause type at all. For the *or* may coordinate not just elements within a clause, as in (14b), but complete clauses, as in *Are they alive or are they dead?* Like (5) above, this consists formally of two closed interrogative clauses, but expresses a single question; whereas (5) was a yes/no question, this is an alternative one, but this distinction clearly applies to the coordinative constructions as wholes, not to the separate clauses. The labels yes/no and alternative will accordingly be applied here just to kinds of question, not to subtypes of interrogative clause.

Now to the examination of open interrogatives. More commonly used terms are 'information question,' 'special question,' 'partial question,' 'question-word question,' 'wh- interrogative/question.' The term 'open' reflects the fact that the interrogatives are characteristically used for questions where the set of answers is open-ended, as in (15). Other factors may close the set, as in *When are you going, today or tomorrow?*, where the addition of *today or tomorrow* in a loose appositional relation to *when* yields an alternative question. Given the distinction between general and language-particular definitions, however, this is no problem: the general term open interrogative reflects the fact that these clauses are characteristically used to express open questions, while the classification of individual examples is determined by reference to the language-particular grammatical criteria, and by these criteria the example clearly belongs with (15).

The grammatically distinctive property of open interrogatives is the presence of an interrogative word: *who*, *what*, *which*, *why*, etc. (The spelling of these words provides, of course, the basis for the *wh-* label, but this English bias makes it an unsatisfactory term for a general category.) The interrogative words occur as or within phrases filling a range of functions within the structure of the clause: subject (*Who/Which one [did it?]*), object (*What/Whose car [did you borrow?]*), predicative (*Who/How old [is she?]*), time adjunct (*When/What time [are you going?]*), and so on. They thus combine two roles: one as a marker of open interrogative clause type, one as a pronoun, determiner, temporal adverb, etc., with functions that can also be filled by noninterrogative words. A special case is where the two roles are associated with different clauses, as in *What do you think she said?* Here the *what* marks the main clause as interrogative but at the same time functions as object of *said* in the subordinate clause.

For some of the interrogative words there is a corresponding noninterrogative indefinite: *someone* corresponds to *who*, *something* to *what*, *somewhere* to *where*, and so on. If one substitutes the indefinite for the interrogative, the result is what is commonly called the presupposition of the question. For example, *Who has taken my umbrella?* presupposes *Someone has taken my umbrella*: if I ask that question I will normally be taking it for granted that someone has taken my umbrella, so that the information I am seeking is simply the identity of that person (this is the basis for the term 'partial question,' mentioned above as one of those sometimes used for the open interrogative category). *Which* differs from the other interrogative words in that it indicates a selection from a definite set specified in an *of*-phrase, as in *Which of these approaches would you recommend?*, or merely implicit in the context, as in *Which approach would you recommend?*—compare *What approach would you recommend?*, where there need be no already defined set of approaches to choose from.

In all the examples so far the interrogative phrase has occupied initial position, but this is not quite an obligatory feature of the construction: particularly in a context of sustained inquiry, examples like *And so he must have left at approximately what time, [would you say?]* are perfectly possible. Normally, however, the interrogative phrase does come first, and this is commonly handled by postulating a transformation that moves it to initial position from an underlying position determined by its noninterrogative role, e.g., from the unmarked position for an object (shown by '\_\_\_\_') in *What did you say \_\_\_\_ to the inspector?* The movement of a nonsubject phrase to front position is accompanied by the subject-auxiliary inversion that is the sole marker of the closed interrogative type: compare *Have you seen something?* (closed) and *What have you seen?* (open).

## Sentence Types and Clause Subordination

All languages, it may be assumed, provide the means to ask both closed and open questions. They do not all, however, have both closed and open interrogatives. It has already been noted that intonation alone can be used to express a closed question, and languages (such as Modern Greek) where this is the sole device used for that purpose will not have a grammatical category of closed interrogative. Languages which do have this category usually mark it by one or more of three grammatical devices:

- (a) an interrogative particle or clitic, usually appearing in a fixed position in the clause, typically first, second (for enclitics), or last (e.g., initial *est-ce que* in French, second position *li* in Serbo-Croat, initial *sé* or *njé* or final *bí* in Yoruba);
- (b) an interrogative verb-form (as in Greenlandic or Blackfoot);
- (c) fronting of the verb (as in English).

Open interrogatives are marked by an interrogative word distinguishable from the particles or clitics just mentioned in that they have a dual role, as explained above; the construction may or may not also be marked by an interrogative particle/clitic, interrogative verb-form, or verb fronting. Again there are languages (such as Hopi) which lack these special dual-role interrogative words and hence have no open interrogative category: for open questions they simply use an indefinite in a declarative with rising intonation or in a closed interrogative. (Note that utterances of this kind in English, e.g., *You're going somewhere?* or *Are you going somewhere?*, will often be responded to as though they were open questions, i.e., with information about the destination; in this case the open question is conveyed indirectly, rather than directly by means of the open interrogative *Where are you going?*) Moreover, though it is semantically justifiable to regard closed and open questions as subclasses of question, it should not be assumed that in all languages which do have both closed and open interrogatives there will always be grammatical justification for regarding them as subclasses of a larger interrogative class. In English, justification for the larger class is found in the fact that subject-auxiliary inversion is a major marker of both subtypes (inversion is also found in declaratives, as in *Never before had she tried so hard*, but this case of inversion, unlike interrogative inversion, occurs also in subordinate clauses: *He remarked that never before had she tried so hard*). In French, both subtypes can be marked by the particle *est-ce que*. In Greenlandic, both have interrogative verb-forms. But there need be no such structural feature common to both—e.g., in languages (such as Yoruba) where the closed type is marked by a particle, the open type by a dual-role interrogative word.

There are, however, cases where the interrogative clause type is overridden in the determination of illocutionary force. A distinction has been made between the semantic category of question and the

illocutionary category of inquiry: interrogatives almost always express questions, but questions are quite often expressed with other illocutionary intentions than inquiry—in various expository genres, for example, one might pose a question to direct the audience's attention to the issue that one proposes to discuss. The focus here will be on three special cases where an interrogative is typically used without inquiry force. In the first place, interrogatives are often used as directives: *Can/Could/Will/Would you pass the salt?*: *Would you mind opening the door?*: *Would you be so good as to turn on the light?* Such clauses are typically used not to elicit answers but as requests—to pass the salt, open the door, turn on the light. A condition for complying with a request is an ability and willingness to do so, and a question concerning this ability or willingness can be used as an indirect way of making the request—politer, typically though not invariably, than the use of an imperative precisely because of its indirectness (cf. Davies 1986: ch. 2). The directive intention can be explicitly signaled by means of *please*: *Would you please hurry*. Some forms of expression are more idiomatically used in this way than others which are semantically equivalent—e.g., *can you ... rather than are you able to ...* Most of them involve closed interrogatives, but examples are also found in the open type, notably *why* + negative, as in *Why don't you come with us next time?*

Second, interrogatives can be used to express rhetorical questions, questions whose answer is pragmatically so obvious that uttering the question indirectly conveys the answer, i.e., has the indirect force of a statement: *Who cares, anyway?* (answer: *no one*). Arguably a special, and very frequent, case of this is the exclamatory use of closed interrogatives: *Aren't they small!*; *Am I hungry!* Note that although the first of these is negative and the second positive, the implied statements are in both cases positive: *They are (remarkably) small*; *I am (remarkably) hungry*. The exclamatory component is commonly signaled prosodically, and the exclamatory-assertive force may be explicitly indicated by a special intensifying use of *ever*: *Am I ever hungry!*

Third, mention should be made of the special use of elliptical interrogatives as 'tags,' as in *She has agreed, hasn't she?* *They don't like it, do they?* The two clauses are in a close paratactic relation and the illocutionary force attaches to the construction as a whole rather than separately to the two component clauses. The force depends on the intonation: roughly, a rising tag asks whether the first proposition is in fact true, while a falling tag seeks agreement with the first proposition, about which the speaker is in little or no doubt. Where the tag has the same polarity as the first clause, as in *(So) you told her, did you?*, there is really no inquiry force at all: it is hardly asking for an answer. The speaker is not in doubt about the truth of the first proposition, and the tag



has an emotive role, indicating (in combination with the prosody) the speaker's attitude, very often one of disapproval, sarcasm, or the like.

### 1.7 Exclamatives

Exclamatives in English are marked by a fronted exclamative phrase containing *how* or *what*: *How well she sings!*; *What a fantastic time we had!* *How* and *what* belong also to the class of interrogative words, and this close affinity between exclamatives and interrogatives is a widespread feature in the world's languages (cf. Elliott 1974). There are, however, differences between interrogative and exclamative *how what*. When modifying the verb, interrogative *how* is an adverb of manner (as in *How did he do it?*), whereas exclamative *how* is an adverb of degree (as in *How he hated them!*). Exclamative *what*, also concerned with degree, functions as determiner in NP structure and in count singular NPs precedes the indefinite article (*What a pathetic proposal they made!*); interrogative *what*, concerned with identity, can function as head in NP structure (*What would you propose?*) or as a determiner mutually exclusive with *a* (*What proposal would you make?*). A further difference is that exclamatives usually have the basic subject-verb order; inversion is not altogether excluded, and when it occurs there is potential ambiguity between the two constructions: *How often have I told you not to do that!?*

Exclamatives have an exclamatory meaning, but 'exclamation' is not an illocutionary category, for any of the major illocutions can have an exclamatory component of meaning overlaid upon it. This is why exclamatory statement was given as the characteristic use of exclamatives. *What on earth is it?* would be an exclamatory inquiry. *Get the hell out of here!* an exclamatory directive, but in these cases the exclamatory component of meaning is not grammaticalized into a distinct clause type category, as it is in the *how what* construction. With statements, moreover, there are many other ways of conveying exclamatory meaning than by the use of the exclamative clause type—e.g., by prosodic modulation or by means of intensifiers (*I was so hungry!*; *He made such a fuss!*; *It's absolutely delicious!*): exclamatives thus account for only quite a small proportion of exclamatory statements.

## 2. Clause Subordination

### 2.1 Desententialization

It was noted at the outset that when a clause is subordinated it generally loses the illocutionary force that it would normally have if uttered on its own as a sentence. If I utter *Kim is downstairs* on its own I normally make a statement, committing myself to the truth of the proposition that Kim is downstairs, but there is no such statement, no such commitment, when I utter it as a subordinate clause, i.e., as part of some larger clause: [*Max thinks*] *Kim is downstairs*; [*If*] *Kim is downstairs* [*we can ask her*]. This loss of

illocutionary force is one aspect of the 'desententialization' that characteristically accompanies the subordination of a clause—i.e., the loss of features of interpretation and/or form that are associated with a clause standing alone as a sentence (see Lehmann 1988; also Palmer 1987).

As further illustration of the change in interpretation that may accompany subordination, consider (16)–(17):

Come in before it rains. (16)

If you told Max you were now better, he might not believe you. (17)

In (16) *it rains* is interpreted significantly differently than it would be as a main (i.e., nonsubordinate) clause, for in (16) one understands some potential future event of raining. With respect to the time of the event, it is closer in meaning to *It will rain* than to *It rains* as a main clause, but it differs in modality, as reflected in the absence of *will*. The main clause would (normally) be used as a statement: *will* is then pragmatically required to express the appropriate predictive modality, for in main clauses a nonmodal form is used for future events only when they are scheduled or determined in advance, as in *The sun sets at 4.55 tomorrow*; in subordinate (16), however, the modal is not needed because the 'rain' proposition is not being asserted. In (17) the meaning expressed by the past tense inflection in *told* is one of modality rather than time: the speaker presents your telling Max (a potential future event) as less likely than in the present tense construction *if you tell Max* . . . ; in main clauses, by contrast, *told* can only have a past time meaning. The other subordinate clause in (17), *you were now better*, is an example of what is traditionally called 'indirect reported speech' (though the term is too narrow: thoughts, feelings, etc. can be reported as well as speech). And here too a past tense may have a different interpretation than is normal for main clauses. In (17) the past tense in *were* does not indicate that the time of your being better is past: the time is present, but it is expressed as present relative not to the time of uttering (17) but to the time of the *told* clause. The tense is thus not a deictic past but an underlying present that has been 'backshifted,' changed from present to past, to agree with the past tense reporting verb *told* (for fuller discussion of tense in reported speech, see Comrie 1985).

In many languages the interpretive differences between the subordinate clauses in (16)–(17) and main clauses would be accompanied by formal differences (e.g., subjunctive as opposed to indicative verb forms), but the English examples illustrate the point that there can be desententialization without formal internal marking. Prototypically, however, subordination is marked in the internal structure of the clause. The major internal markers of subordination

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are of the same general kind as those mentioned in Sect. 1 as distinguishing clause types, but they differ of course in specifics. They include:

- (a) verb-form—it is common for various verb inflections to be characteristic of subordinate clauses, notably nonfinite and subjunctive forms; contrast, for example, subordinate [*I remember*] *there being some debate on the issue* with main *There was some debate on the issue* (cf. Palmer 1986: 156–63, 172–74);
- (b) special closed class words—most obviously subordinators (e.g., *that/whether*, as in [*He wasn't sure*] *that/whether it was true*), and relative words (*who, which, where*, etc., as in [*The man*] *who broke it [was arrested]*);
- (c) order—as in the contrast between main *What can we do about it?* and subordinate [*I wonder*] *what we can do about it* (a more striking example is provided by German, where the verb occurs in final position in subordinate clauses but in second position in declarative main clauses);
- (d) omission of elements—subordinate clauses commonly lack structural elements that would appear in a corresponding main clause; contrast main *I met her* and subordinate [*It was nice*] *meeting her*, which has no subject.

### 2.2 Finite and Nonfinite Clauses

One important form of desententialization is nonfiniteness. Main clauses are characteristically finite, whereas subordinate clauses may be finite or nonfinite (18) and (19):

- |  |           |      |
|--|-----------|------|
| (a) [ <i>I'm glad</i> ] <i>that she will be present.</i>       | Finite    | (18) |
| (b) [ <i>I'm keen</i> ] <i>for her to be present.</i>          | Nonfinite |      |
| (a) [ <i>The guy</i> ] <i>who was leading them [stumbled].</i> | Finite    | (19) |
| (b) [ <i>The guy</i> ] <i>leading them [stumbled].</i>         | Nonfinite |      |

Nonfinite subordinate clauses thus differ more radically in structure from comparable main clauses than do finite ones. In (18), for example, the comparable main clause is *She will be present*; the finite subordinate (a) differs from this simply in the presence of the subordinator *that*, which is, moreover, omissible; the nonfinite subordinate (b), on the other hand, contains the subordinator *for*, the special infinitival marker *to*, and has its subject in the accusative case (*her*, not *she*). Furthermore, a number of verbal contrasts can be made in (a) but not (b): *will be* can be replaced by *may be, was, is*, etc., but equivalent replacements are not available in (b). And in (18b) the subject is omissible when it is recoverable from the 'superordinate' clause (i.e., the one in which the subordinate clause is embedded): [*I'm keen*] *to be present*. The same points apply to (19), where the comparable main clause is *the guy was leading them*. Finite (a) differs simply in the substitution of the relative pronoun *who* for the subject. Nonfinite (b), however, lacks a subject altogether,

and also the auxiliary verb—and hence it additionally lacks such verbal contrasts as those available in (a) between *was leading, led, leads, will lead, should lead*, etc. To a large extent, the differences are a matter of a nonfinite construction being reduced in various ways, with some elements omitted, some contrasts not available. There is a natural link between these features and subordination, for some of the information that in a main clause environment has to be explicitly expressed if it is to be conveyed can in a subordinate environment be left implicit, inferable from the superordinate context. It was noted in considering (18b) that the subject may be recoverable in this way, and the same applies (though much less frequently) to the object or complement of a preposition: e.g., in [*Bill found the instructions hard*] *to follow* the missing object is recovered from *the instructions*, as the subject is from *Bill*. Similarly with various features of meaning involving time and modality. Compare, for example, [*I regret*] *discussing it with him* (past time) with [*I propose*] *discussing it with him* (modalized future) or [*She was the first one*] *to do it* ('She did it') with [*She is the one*] *to do it* ('She should do it').

Traditionally, the general terms finite and nonfinite are applied initially to verb-forms, and then derivatively to clauses, so that a finite clause will be defined as one containing a finite verb. The grammatical sense of finite is related to its everyday sense of 'limited'; more specifically, as applied to Latin, finite verb-forms are limited with respect to (i.e., inflect for) the categories of person and number. For example, the present active indicative forms of the verb *laudo* 'praise' are *laudo* (1st sg), *laudas* (2nd sg), *laudat* (3rd sg), etc., hence finite, whereas the present active infinitive form is invariably *laudare*, hence nonfinite.

This is a very narrow definition, and there are languages where it does not yield satisfactory results. In Portuguese, for example, the infinitive inflects for person/number under certain conditions, yet the infinitive is normally the prototypical nonfinite form. Conversely, there are languages such as Japanese where there is no person/number inflection on the verb at all, but one would not want to say that all clauses in such languages were nonfinite. There are likewise problems in applying the definition as it stands to English because of the very small amount of person-number differentiation it displays: verbs other than *be* have just a two-way contrast between 3rd sg (e.g., *takes*) and not 3rd sg (*take*) in the present tense and no contrasts at all in the past tense or elsewhere. Traditional grammars of English avoid this problem by postulating a massive amount of syncretism (i.e., distinguishing forms when there is no overt difference). Thus the *be* of *He insists that I be told* is analyzed as a 1st sg form, that of *He insists that you be told* a 2nd sg or 2nd pl form, and so on, so that these verbs then qualify as finite. This, however, is to force English into an alien mold. There is no verb

exhibiting any person/number contrasts in this construction, and hence no justification for saying that these categories apply: *be* is simply the invariable base form of the verb (cf. Sect. 1.5 above). It is arguable that in English the primary contrast in the system of verb inflection is between the tensed forms (*am, is, are, was, were*) and the nontensed forms (*be, being, been*) and that it is at the level of clause structure rather than that of verb inflection that the category of finiteness can be useful if its interpretation is broadened somewhat, especially if one allows for varying degrees of finiteness instead of insisting on an all-or-nothing contrast of finite vs. nonfinite.

Fully finite clauses are those displaying the full range of verbal contrasts characteristic of declarative main clauses; in English this comprises the set of tensed clauses, i.e., clauses containing a tensed verb-form. The nontensed base form is found in such constructions as (20)–(21):

- (a) Be careful. (20)  
 (b) [It is essential] that they be told.  
 (c) Even if they be found guilty, [they will still deserve our sympathy].  
 (a) For them to be seen together (21)  
     [would be very dangerous].  
 (b) [I won't let] them be insulted.

Traditionally the clauses in (20) are finite, those in (21) nonfinite, and although they all contain the same verb-form, this analysis can be retained and justified on the grounds that the constructions in (20) are significantly closer to fully finite clauses than are those in (21). First, the imperative (20a) is like a tensed clause in taking auxiliary *do* in negatives and emphatic positives (cf. Sect. 1.5); it is the only nontensed construction with this property and thus may be regarded as coming second on the scale of finiteness. Imperatives, moreover, are virtually restricted to main clauses, whereas nonfinities are, as noted, normally subordinate. And second, (20b and c) are similar to tensed clauses in that they take nominative subjects (thus *they* in contrast to accusative *them* in (21)); the *be*, moreover, is here replaceable by tensed *is* or should *be* without any further change.

The four main kinds of nonfinite constructions traditionally distinguished are exemplified for English in (22)–(25):

- [He enjoyed] writing the letter. (22)  
 [The guy] writing the letter [couldn't spell]. (23)  
 [She had lost the letter] written by her father. (24)  
 [It is essential] for her to write the letter. (25)

The verb-form *writing* is traditionally analyzed as a gerund in (22) and a present participle in (23). A gerund is a verb-form with some functional resemblance to a noun, while a participle is one with some functional resemblance to an adjective. Thus in (22)

*writing the letter* is complement of the verb *enjoyed*, comparable therefore to a noun (phrase), whereas in (23) it modifies *guy*, the prototypical modifier of a noun being an adjective (phrase). In such languages as Latin the gerund and present participle are overtly distinct, but there is no such distinction in English and thus application of the traditional analysis to English again involves unjustifiable syncretism. Most modern grammars of English accordingly have a single inflectional category for the two instances of *writing*: it is usually called a participle, though it is arguable that a compound term gerund participle would better indicate its status, bringing out that it corresponds to both forms in languages where they are distinct. Modern grammars often use the derived term 'gerundive' for the clause level construction of (22), it is doubtful whether any viable syntactic distinction can be drawn between so-called gerundive and participial uses of this verb-form (for arguments against the traditional distinction, see Huddleston and Pullum, in press: Chapter 14). Turning now to (24), the form *written* is used in the passive construction (as here) and in the perfect ([*Her father has*] *written* [*the letter*]); the traditional term for it is 'past participle,' contrasting with the 'present participle' *writing*: they are both nontensed forms. Some grammars distinguish them as 'ing-participle' and 'en-participle' or simply 'ing-form' and 'en-form,' but these will obviously not serve as general terms, and the traditional terms continue to be widely used in spite of the problems they raise. Finally the *write* of (25) is traditionally analyzed as an infinitive form; it has been argued here that it is not a distinct verb-form in English and should be subsumed under the base form, but one can validly apply the term 'infinitival' to the clause-level nonfinite construction of (25) and (21) since there are structural features distinguishing it from finite (20). The infinitive is the unmarked nonfinite form, lacking the positive properties of participles or gerunds; often it is associated with a more hypothetical, modalized meaning than these latter—compare, for example, [*She is the one*] *to do it* vs. [*She is the one*] *doing it*.

### 2.3 Subordinate Clause as a Relational Category

The preceding sections looked at ways in which the subordinate status of a clause may be reflected in its internal structure, but it was noted that there is not always any internal difference between a subordinate clause and a main one. It follows that subordinate clause is essentially a relational category, defined primarily by reference to the larger construction in which it appears rather than in terms of its own structure. A subordinate clause is thus one functioning as a dependent within a larger, superordinate, clause. Nevertheless, it is because subordination is characteristically marked internally that subordinate clauses constitute a significant syntactic class. There is no comparable marking of superordinate clauses: the

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classes one needs to distinguish, therefore, are subordinate clauses and main clauses, with the latter defined negatively as not subordinate. Not all main clauses are superordinate (since they frequently do not contain any subordinate clause within them, as in (1)), and not all superordinate clauses are main (because subordination is 'recursive': in (17), for example, *if you told Max you were now better* is superordinate to *you were now better*, yet is itself subordinate to the main clause that forms the whole sentence).

Matters are complicated, however, by the fact that there is sometimes conflict between the external and internal aspects of subordination. This is illustrated in such samples as (26), in contrast to (27):

- (a) [The issue is] what should we tell her? (26)  
(b) To think that I was prepared to trust a guy like that!

- (a) [The issue is] what we should tell her. (27)  
(b) How amazing it is that I was prepared to trust a guy like that!

In (26a) *what should we tell her?* is externally subordinate by virtue of being complement to *is* (hence part of the clause with *is* as verb), but it has the inverted subject-auxiliary order that is characteristic of interrogative main clauses: subordinate interrogatives normally have the form shown in (27a). Conversely, (26b) is not externally subordinate but has an infinitival structure, which is characteristic of subordinate clauses: compare the finite main clause in (27b). There is no established terminology for handling these relatively exceptional constructions; as priority has been given to external features in the definitions, one might speak of *what should we tell her?* in (26a) as a 'structurally incongruous' subordinate clause in contrast to the 'structurally incongruous' *what we should tell her* in (27a), and similarly for the main clauses (26b) and (27b) respectively. (Structurally incongruous indirect reported speech is not always clearly distinct from direct reported speech, at least in the spoken language: compare [*She asked*] *what he does*, indirect/congruous; [*She asked*] *what does he do* indirect/incongruous; [*She asked,*] *'what does he do?'* direct.)

It has been said that a subordinate clause is one contained within a larger clause, but this definition is in need of some elaboration. One issue concerns the difference between such examples as (28) and (29):

- Ed joined the club because he was bored. (28)

- Ed joined the club although he had little spare time. (29)

The *because*-clause in (28) can be made focus of a cleft-construction (*It was because he was bored that Ed joined the club*) and it can figure as one of the alternatives in an alternative question (*Did Ed join the club because he was bored or because he wanted to get fit?*), but the *although*-clause in (29) cannot (*\*It was although he had little spare time that Ed joined the*

*club*; *\*Did Ed go out although he had little spare time or although he was lazy?*). These facts suggest that the *because*-clause is more deeply embedded than the *although*-clause. It is arguable that the subordinate clause is functioning as modifier within the predicate in (28), but not in (29): in the latter it is an immediate constituent of the whole sentence. The status of the *because*-clause as an element within a larger clause will then be unproblematic, but for the *although*-clause in (29) to qualify one must allow that the whole sentence has the form of a clause even though its structure is head + modifier, not subject + predicate: it will be a clause because its head element, *Ed joined the club*, is a clause (of subject + predicate structure). But relatively fine details of constituent structure are involved here where the analysis will depend heavily on the theoretical model adopted: the proposal just made is acknowledged to be problematic. (Some works, e.g. Halliday 1985; Matthiessen and Thompson 1988, distinguish two kinds of clause subordination, 'embedding' and 'hypotaxis': only the former satisfies the definition of subordination given here, with hypotaxis being a matter of combining one clause with another in a structure which is not itself a clause: for a critique, see Huddleston 1988: Sect. 2.2.)

A further issue concerns the distinction between subordination and coordination—e.g., between (29) and (30):

- He joined the club but he had little spare time. (30)

In (29) *although he had little spare time* satisfies the definition of subordinate clause under the interpretation suggested above; in (30), by contrast, *but he had little spare time* does not satisfy the definition because the construction of which it is a part is not itself a clause, but a combination of two clauses of equal syntactic status. The question arises, however, as to how to justify assigning different structures to (29) and (30) in this way.

Notice that the concept of desententialization applies to coordination as well as to subordination: the *but*-clause no more forms a sentence on its own than does the *although*-clause. The degree to which a clause loses the properties of a sentence is typically greater when it is subordinated than when it is coordinated, but coordinative desententialization may nevertheless be clearly apparent in the interpretation or form of a clause. There has already been discussion (Sect. 1.5) of how coordination can lead to a loss of separate illocutionary force in examples like (5) or *Do that again and you'll regret it*. The chief effect on form is loss of elements through ellipsis, as in [*Tim needed three attempts*] *but his sister only two*; this kind of reduction excludes any possibility of defining main clauses in terms of an ability to stand alone as a sentence.

One clear difference between (29) and (30) is that the *although*-clause can be fronted, whereas the *but*-clause cannot: *Although he had little spare time he*



joined the club; \*But he had little spare time he joined the club. It is common for dependent elements to be able to occur before or after their head, but comparable structural variation is not found in coordination. A second important difference emerges when one considers *although* and *but* in combination with the relative construction: [Ed.] *who joined the club although he had little spare time* vs. [Ed.] *who joined the club but who had little spare time*. In the *although*-construction relativization involves changing the first *he* to *who*, but not the second, whereas in the *but*-construction both are changed. This brings out the coordinative nature of *but*: the items it joins have to be of like syntactic status, either both main clauses, as in (30), or both relative clauses, as here. Because the *although*-clause is, by contrast, subordinate, it does not have to be of the same status as the one with which it is in construction, and hence relativization of the latter leaves it unaffected. (For a fuller discussion of the subordination–coordination distinction, see Quirk, et al. 1985: 918–28; Palmer 1986: 199–207.)

#### 2.4 The Classification of Subordinate Clauses

Subordinate clauses are traditionally classified on the basis of functional similarities to three of the major parts of speech:

- |  |              |
|--|--------------|
| (a) [I remember] that she slapped him.       | Nominal (31) |
| (b) [They arrested the man] who attacked us. | Adjectival   |
| (c) [She left] before it was over.           | Adverbial    |

In (a) *that she slapped him* functions as complement of *remember*, a function primarily associated with nouns (or NPs): compare [I remember] *her reaction*. In (b) *who attacked us* modifies *man*, and the prototypical modifier of a noun is an adjective: compare [They arrested the] *aggressive [man]*. In (c) *before it was over* modifies the verb, a function that figures in the traditional definition of the adverb: compare [She left] *early*.

This kind of analysis raises a number of problems, however. Note, first, that such a clause as *that she slapped him* can also be used ‘adverbially,’ as in [He behaved so badly] *that she slapped him*. It is necessary to describe the structure of the larger construction, saying here, for example, that the subordinate clause is dependent on *so* and that in (31a) it is complement of *remember*, but once the function has been given nothing is added by saying that it is adverbial in one and nominal in the other. As noted above, subordinate clauses form a significant syntactic class because they prototypically differ in form from main clauses, but from the point of view of form there is no difference between the two occurrences of *that she slapped him* and hence we have no reason to assign them to different classes. What is important is the distinction between this kind of clause and that found

in (31b), and so on. Second, and conversely, this type of classification will separate [I have spent] *what you gave me*, (31b) and [He put it back] *where he had found it* as respectively nominal, adjectival, and adverbial, but from the point of view of their structure they belong together, as relatives. (Traditional grammar does have a class of relative clauses, but it does not fit in well with the function-based classification, as these examples show; moreover, it remains unclear where in the latter scheme relative clauses with a clause as antecedent should be placed, as in [I’ll come at six tomorrow,] *which will give us more time*, for there is no close analogy with any word class here.)

For these reasons, the classification given in (31) will be abandoned, and focus placed instead on classes based on structural likenesses, with attention limited to finite clauses. The major subclasses appropriate for English are illustrated in (32):

- |  |               |
|--|---------------|
| (a) [I couldn’t obtain the book] which he recommended. | Relative (32) |
| (b) [I’m not as fit as] I was then.                    | Comparative   |
| (c) [He doesn’t know] that he is dying.                | Content       |

Relative clauses are distinguished by the fact that they contain a relative word or a gap (‘zero’ element) anaphorically related to an antecedent in the superordinate clause. Subordinate (32a), for example, differs from the main clause *he recommended the book* in that it has the relative pronoun *which* (in initial position) instead of the ordinary NP *the book* (in the basic, postverbal, object position), and the *which* receives its interpretation from the head of the NP in which the clause is embedded. The relative word may be a pronoun (*which*, *who*, *whom*, *whose*), an adverb (*when*, *where*, *why*, as in [I remember the time] *when I first met her*, etc.), or a determiner (*whose* or *which*, as in [He may be here], *in which case we can ask him*, where the anaphoric phrase in *in which case* is interpreted as ‘if he is here’). The gap construction is seen in [I couldn’t obtain the book] *he recommended*: this differs from (32a) in that the relative phrase is missing. Traditional grammar includes among the relative pronouns the *that* introducing relative clauses like [I couldn’t obtain the book] *that he recommended*; modern grammars more often equate it with the subordinating conjunction introducing content clauses like (32c), and under this analysis *that*-relative clauses will belong with the gap construction, having no overt relative phrase.

Comparative clauses, which follow either *as* or *than*, differ internally from main clauses by virtue of their reduction by anaphoric ellipsis. Example (32b), for example, has ellipsis of the predicative complement: one understands, from the antecedent in the superordinate clause, ‘I was fit then’ (or rather something like ‘I was x fit then,’ where ‘x’ represents an unspecified degree modifier: the comparison is between the degree to which I am fit now and the degree

## Sentence Types and Clause Subordination

to which I was fit then). There is no suggestion, of course, that anaphoric ellipsis is restricted to subordinate clauses. Subordination nevertheless creates a particularly favorable environment for ellipsis in that missing elements will be readily recoverable from the superordinate clause. The fine details of what can or must be left out in comparative clauses are, moreover, unique to that construction.

Content clauses form what can be regarded as the residual class of finite subordinate clauses: they lack the special structural features of the relative and comparative classes. Compare, for example (33):

- |   |             |      |
|---|-------------|------|
| (a) [He grumbled about the pies]<br>I had eaten the day before. | Relative    | (33) |
| (b) [He ate as many pies as]<br>I had eaten the day before.     | Comparative |      |
| (c) [He didn't tell her]<br>I had eaten the day before.         | Content     |      |

In (a) there is a gap created by the missing relativized object: the closest main clause equivalent is *I had eaten the pies the day before*. Example (b) exhibits again comparative ellipsis: the closest main clause this time is *I had eaten that many pies the day before* (substituting *that* for the unspecified degree modifier). Example (c) lacks these special features and in fact, being a very simple example, is not structurally distinct from a main clause (though *that* could be inserted as a marker of subordination, as in (32c)).

One construction now widely analyzed as involving a content clause, but handled very differently in traditional grammar, is illustrated in (34):

- He left before the meeting ended. (34)

The traditional analysis (which was implicitly followed in Sect.2.3) takes the subordinate clause to be *before the meeting ended* (hence 'adverbial'), with *before* a subordinating conjunction, like the *that* of (32c). This, however, is to treat the *before* very differently from that of *He left before the end of the meeting*, where it is a preposition (and where, implicitly, *the end of the meeting*, unlike *the meeting ended* in (34), is a constituent). The criteria for distinguishing in practice between prepositions and subordinating conjunctions are extremely complex (note, for example, that the *while* of *while eating* it is said to be a conjunction whereas the *before* of *before eating* it is a preposition), and many grammarians now include most of the traditional subordinating conjunctions (though not *that*, *whether*, and one or two more) in the class of prepositions. In this analysis, *the meeting ended* in (34) will be a content clause functioning as complement to *before*. Prepositions—like verbs, nouns, and adjectives—will now be subclassified according to what kinds of complement they can have. Thus *underneath* takes NPs, *while* takes content clauses or nonfinites with a gerund-participle verb-form, *before* any of these three kinds, and so on.

In the generative literature content clauses are normally called 'complement clauses'. We have preferred Jespersen's term 'content clause', partly because 'complement' is a functional (relational) label, whereas our concern here is with a classification of clauses based on internal properties, partly because there is no one-to-one relation between the clause class in question and complement function. On the one hand, content clauses occur in adjunct function in such examples as [*He had invited his mother,*] *that she might see the situation for herself*; [*What has happened,*] *that you're looking so worried?*; [*I'm inviting her,*] *whether you approve or disapprove*. On the other hand, comparative clauses also function as complement—of the prepositions *than*, *as*, or *like*. Note then the contrast between [*It was just me and Eileen getting drunk together like*] *we used to in the old days* (comparative, with reduction of the complement of *used to*), and [*It seems like*] *we're going to get into a speck of trouble* (content clause, with no reduction).

### 2.5. Clause Type in Finite Subordinate Clauses

As remarked at the outset, clause type contrasts are found in subordinate clauses as well as in main clauses, as seen in example (35):

- |   |                      |      |
|---|----------------------|------|
| (a) [No-one knew] that he'd chosen a young manager. | Declarative          | (35) |
| (b) [No-one knew] if he'd chosen a young manager.   | Closed interrogative |      |
| (c) [No-one knew] which young manager he'd chosen.  | Open interrogative   |      |
| (d) [No-one knew] what a young manager he'd chosen. | Exclamative          |      |

Again a distinction must be made between structurally congruous and structurally incongruous subordinate clauses. The latter include such constructions as [*I may be a little late,*] *in which case please do start without me* (imperative relative) or colloquial [*We must hurry*]*—because didn't you say it started at six?*; here there is syntactic subordination but from a communicative point of view the subordinate clauses have the same status as main clauses, being invested with their own illocutionary force. Such exceptional constructions will be set aside, and henceforth attention will be restricted to structurally congruous subordinate clauses. The only clauses of this kind where the type system applies are content clauses.

Although there are clear similarities between the type systems in main and subordinate clauses, there are also significant differences. These have to do with: (a) the set of terms in the system; (b) the structural features marking the various types; (c) the meaning. Points (a) and (c) merit brief comment.

Imperative clauses in English (and indeed in most languages) figure only in the main clause system. The utterance of imperative *go away* can be reported as *He told me to go away*, and for this reason this latter

construction has sometimes been treated as containing a subordinate imperative. The subordinate clause, however, is simply the infinitival *to go away*, which also occurs in many environments that have no connection with the imperative (e.g., *I'm hoping to go away*). The directive meaning of the original is captured in the reporting verb *told* in the superordinate clause, not in a special type of subordinate clause. Another construction that has been regarded as a subordinate imperative is illustrated in [*She demanded / It is important*] *that he go away* (also (20b) above). Like a main clause imperative this has a base-form verb, but the differences between the two constructions are nevertheless far too great for it to be validly classified as a subordinate imperative. Most notably, it allows the full range of subjects found in declaratives, whereas imperatives take only a subset, so that there are innumerable examples without main clause counterparts: [*it is essential*] *that there be a doctor present / that it not be raining*, and so on. Accordingly these subordinate clauses will be regarded as a subclass of declaratives rather than as imperatives; the subclass might be called 'subjunctive', applying this term to a syntactic construction rather than an inflectional verb-form.

As for meaning, the subordinate types are of course less closely related to illocutionary force than the main clause types. Subordinate declaratives normally express propositions, as do main declaratives; but whereas the proposition expressed in a main declarative is normally taken as the content of the speaker's statement, the way the proposition expressed in a subordinate declarative is taken depends on properties of the superordinate clause. Thus *She knows he is ill* and *She is staying here because he is ill* both entail *he is ill*, whereas *She thinks he is ill* and *We're in trouble if he is ill* do not: this follows from the semantic properties of *know*, *think*, *because*, and *if*. The same applies, essentially, to exclamatives. Subordinate interrogatives can generally be paraphrased as *the answer to the question '...'* e.g., *She asked/told me who he is* = *She asked/told me the answer to the question 'Who is he?'* Thus with a main interrogative the speaker characteristically expresses the question with the force of an inquiry, with the aim of eliciting an answer from the addressee, but with a subordinate interrogative the question is integrated into the semantic structure of the superordinate clause. (It must be remembered, however, that a single question may be expressed by a coordination of interrogatives, as [*He didn't know*] *whether it was genuine or whether it was a hoax*.)

The choice of clause type in subordinate clauses is generally constrained by the governing verb, adjective, noun, or preposition. Although *know* allows all three primary types, as illustrated in (35), *matter* takes (in subject function) only declaratives and interrogatives, *wonder* takes only interrogatives, *expect* only

declaratives, and so on. The close semantic relation between exclamatives and declaratives is again reflected in the fact that all items taking exclamatives also take declaratives. But the two subtypes of interrogative do not have identical distributions: such items as *amazing*, for example, take the open but not the closed subtype (*It's amazing who they invited*/\**whether they invited him*). (For fuller discussion of type selection, see Grimshaw 1979.)

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## Serial Verbs

M. Sebba

The term 'serial verbs' has been used for a number of superficially similar constructions in various languages, including West African languages of the Kwa group, Atlantic Creole languages (which derive some of their lexicon and, arguably, some of their syntax from Kwa), Tok Pisin (Melanesian Pidgin English), and Chinese. There is no agreed definition of serial verb, but generally constructions which are so labeled are those which allow two or more verbs (other than auxiliaries) within a single noncomplex sentence or clause, with no overt signs of coordination.

## 1. Descriptive Problems

If self-embedding of sentences and coordination of sentences are universal properties of language, then all languages have the possibility of two or more—in theory, infinitely many—verbs within one sentence. However, there are usually morphological or syntactic markers of coordination or subordination, for example, the conjunction *and* or a dependent verb form (in English, the infinitive form marked by *to*) which distinguishes the embedded from the matrix sentence. 'Serial verb constructions' do not show morphological signs of coordination or subordination within the sentence. This is true both of sentence (1) from Mandarin Chinese, a language with little inflectional morphology, and sentence (2) from Akan (a Kwa language of Ghana), which has person, number, and tense marking:

Tā tiāntian hùì-kè xiě xìn (1)  
s/he daily receive-guest write letter  
'Every day she receives visitors and writes letters.'

ode pono no baae (2)  
3PERS-take-PAST table the come-PAST  
'S/he brought the table.'

While sentence (1) could be regarded simply as involving an unmarked coordination of verb phrases, in (2), the sense of the sentence requires the translation 'S/he brought the table'; the two verbs, *de* and *baae* are interpreted as parts of the same action, which involves 'taking' and 'coming.' Both verbs have past tense marking.

An even clearer indication that the verbs in a construction like (2) have a joint interpretation is found in (3), also from Akan:

migye no midii (3)  
I-accept him I-eat  
'I believe him.'

In (3), the interpretation 'believe' is an idiomatic one derived from the combination of the verbs meaning 'accept' and 'eat.'

This suggests that at least some 'serial' combinations, e.g. (3), have their own, unitary lexical entry, while others, perhaps, like (2), are produced by a lexical redundancy rule which permits verbs of a certain class (e.g., verbs of motion) to be followed by certain other verbs (in this case, the verbs meaning 'come' and 'go,' which provide an indication of direction). This is reminiscent of the verbal affixes of languages like German which are attached by a productive lexical rule to verbs of an appropriate meaning class (e.g., *hin* 'away from' to motion verbs).

In the case of sentence (1), the interpretation is clearly that of two separate but contemporaneous actions, and there are no restrictions on the classes of verbs which may appear in either the first or second verb position. There seem to be no grounds for postulating any lexical rules relating the two verbs; in fact, this may be a case of coordination without morphological marking. It may be a completely distinct phenomenon from the Akan examples (2) and (3). However, Akan also permits coordination-like serial constructions, as in (4):

Yesoree ntem koo ofie (4)  
we-arise-PAST quick go-PAST home  
'We arose quickly and went home.'

Meanwhile, constructions exist in Mandarin which (though not traditionally called serial) involve the use of a second verb as a direction marker:

Tā ná zhūozì dào wūzi-lì qù (5)  
s/he carry table 'to' room-in go  
'She carried the table into the room.'

In Akan, there are some constructions which are ambiguous between 'unitary action' and 'two action' readings:

Amma free Kofi baee (6)  
(name) call-PAST (name) come-PAST  
(a) 'Amma called Kofi towards her.'  
(b) 'Amma called Kofi and came.'

In 6(a), *Kofi* (the second noun phrase, NP2) is interpreted as the subject of *baae* (second verb, V2). In 6(b), NP1 is interpreted as subject of V2. Sentences like (6) thus seem to display ambiguity between an interpretation like that of (2) and an interpretation like that of (4). This suggests that at least two different structures may be involved; coordination of verb phrases in (1), (4), and (6) with interpretation (b), and some kind of subordination or embedding in (2), (3), (5), and 6(a).

Different constructions display different behavior depending on whether the verbs involved are transitive or intransitive. For example, in Sranan, a



Creole of Surinam, the verb *puru* 'remove' often follows a 'handling' verb, as in (7):

- A hari a ston puru na ini a olo (7)  
s/he pull the stone remove LOC in the hole  
'He pulled the stone out of the hole.'

*Puru* on its own is always transitive; however, when used as V2 in a series, it may not have a following object, but must 'share' its object with V1. The verb *trowe* 'eject' in (8) behaves like *puru*; however *naki* 'hit,' which is also transitive, is allowed to have its own object, and takes the object of *fringi* and *trowe* as its subject.

- A fringi a ston trowe naki a bon (8)  
s/he throw the stone eject hit the tree  
'She threw the stone at the tree (and hit it).'

*Ston* in (8) thus plays the double role of object of *fringi* and *trowe*, and subject of *naki*. In this respect, a transitive verb + object like *naki a bon* behaves like an intransitive, taking the object of an earlier verb as its subject, cf. (9):

- A fringi a ston fadon (9)  
s/he throw the stone fall  
'She threw the stone down.'

What examples like (7), (8), and (9) have in common is that there is a strong lexical connection between the two or three verbs involved. In effect, each verb provides a complement to the preceding one, and there are restrictions on which may occur with which: *fringi fadon* is acceptable and normal, but *\*hari fadon* is not. This suggests that the syntactic structure of sentences of this type must: (a) allow for two or more verbs within the simple sentence; (b) permit lexical relations of subcategorization to hold between them; (c) allow the relation 'subject-of' to hold between, in principle, any NP in the sentence and a verb to its right; which NP is subject of which verb will depend on the transitivity of the verbs in the series.

Condition (b) requires that serial structures should be constrained in such a way as to allow verbs to select the class of other verbs in the series. In terms of most currently accepted theories of phrase structure, this would mean that they cannot occur on different branches of a coordinate structure.

One phrase structure schema which has been proposed for serial verbs by several authors is a right-branching one involving a phrase structure produced by a rule like (10):

- VP → V XP VP where X is N or P. (10)

The category here shown as VP cannot be what is traditionally meant by VP (i.e., the constituent containing the verb and all the phrases which it subcategorizes), since in a serial sequence like this each verb may have at most one object or prepositional

phrase associated with it. Most serializing languages, however, seem to have verbs similar to English *put* and *give* which subcategorize a following NP and PP or two NPs. But in a series, these verbs may have only one NP or PP complement, as in the Akan example (11):

- Ogyaw ne sika mää me (11)  
he-leave-PAST his money give-PAST me  
'He left me his money.'

In (11), *mää* 'gave' may have only one object NP, the 'indirect' object *me*, although *mää* when not in a series may have both a direct and an indirect object: *omää me sika* 'he gave me money.'

A schema like (10) has the advantage that, within various widely accepted syntactic theories, it permits lexical relations and relations like 'subject-of' and 'object-of' to hold between verbs in the series. It also captures the intuition that verbs (or verb phrases) function as complements to verbs earlier in the sequence. However, there is no general agreement that (10) is a correct representation for any or all serial constructions. Other linguists have suggested structures involving multiple embedded sentences or verb phrases with relations of subject and object control holding between NPs and verbs embedded below them, in a manner similar to the English *promise* and *persuade*. Yet other solutions have been proposed within the framework of government and binding (see, for example, Byrne 1987). Which structure is seen as 'correct' must be held, at this stage, to be largely a consequence of the proponent's theoretical orientation. There is also no general agreement on whether serial constructions are a unitary phenomenon across languages, or whether there are several different kinds of structure involved. In the latter case different languages would be expected to display different ranges of construction types.

For some linguists the schema (10) occurs even in nonserializing languages like English. On this view, auxiliaries are just a special subclass of verbs which subcategorize for a following verb; the schema (10) thus permits the production of a series of auxiliaries and main verbs like *must begin talking*, etc. If this is the correct analysis of auxiliaries, it must apply to serializing languages (which also have auxiliaries) as well. However, the type of serial verb structures just discussed do not seem in general to have anything in common with 'auxiliary-main verb' constructions. As will be clear from the discussion below, there is usually a lexical relationship between the verbs in a true series, with the choice of later verbs being restricted by the semantic properties of the earlier verbs. Auxiliaries, however, do not seem to be interdependent in this way with their main verbs: any main verb may follow any auxiliary verb. It seems necessary to make a clear distinction between 'auxiliary verbs' and 'serial verbs.'

## Serial Verbs

### 2. Typology of Serial Constructions

Serial constructions can be classified into different types on the basis of the functions of the verbs in the series relative to one another. For example, in (2), (4), (5), and (6) above, V2 is 'come' or 'go' and serves as a directional complement to V1. What is remarkable is that these construction types occur with such regularity in languages which otherwise have little in common, cutting across language families, regional boundaries, and syntactic and morphological typologies. In this section some common serial construction types will be listed, with examples of each.

#### 2.1 'Go' or 'Come' as a Directional Complement

This is so common that it seems to appear in every serializing language. Sentences (2), (4), (5), and (6) above are examples.

#### 2.2 Other Complements to Motion Verbs

These vary from language to language; for example, Sranan has /*puru*/ 'remove,' usually translatable by 'out of,' and *naki* 'hit' for the goal of a verb denoting propulsion (examples (7) and (8)). Akan has *bɔ* 'strike' and *wɔ* 'pierce,' the choice of these being determined by the nature of the action (12–13):

Kofia tow      bo      no      bɔɔ      Amma      (12)  
                  throw-PAST      stone      the      hit-PAST  
 'Kofi threw the stone at Amma (and hit her).'

Kofi tow      agyan      no      wɔɔ      Amma      (13)  
                  throw-PAST      arrow      the      pierce-PAST  
 'Kofi shot Amma with an arrow.'

#### 2.3 Instrumental Constructions using 'Take'

How these should be analyzed is not clear, but similar constructions occur in many languages. 'Take' as V1 marks the instrument of the action denoted by V2. This Yoruba example is typical (14):

Mo      fi      ada      ge      igi      (14)  
 I      take      machete      cut      tree  
 'I cut the tree with a machete.'

#### 2.4 Object Marking with 'Take'

This has the form 'take' NP V2 e ... where NP is the semantic object of V, and e is the empty 'object slot' of V2. 'Take' acts as a dummy verb to front the object of V2. Where V2 is ditransitive, its second object may appear after it in the normal position. The example is from Akan:

Wɔ de      no      too      Adow      (15)  
 they-take-PAST      him      name-PAST      Adow  
 'They named him Adow.'

#### 2.5 'Give' as a Dative and Benefactive Marker

The Akan sentence (11) above illustrates the verb 'give' used as a dative marker with a V1 denoting a transfer. Note that the transfer does not involve a literal 'giving.' Perhaps by extension of this use, 'give'

may be used as a benefactive marker in some languages; cf. the Akan example (16):

oyɛɛ      adwuma      mā      ne      nua      (16)  
 he-do work      give      his      brother  
 'He works for his brother.'

#### 2.6 Comparative Constructions

A verb meaning 'pass' or 'surpass' may be used to form comparatives, for example, in Yoruba:

omo      nāā      gbon      jù      asarun      (17)  
 child      the      clever      surpass      tsetse-fly  
 'The child is cleverer than the tsetse fly.'

#### 2.7 Lexical Idioms

These include a diverse collection of expressions, usually involving two verbs. Sentence (3) shows how the verbs function in series. Table 1 gives examples of lexical idioms from two West African languages and an Atlantic Creole.

Table 1.

Language	V1	V2	Combined meaning
Anyi-Baule	<i>kā</i> 'touch'	<i>klé</i> 'show'	'say, tell'
	<i>bɔ</i> 'hit'	<i>nā</i> 'look'	'taste' (liquid)
Yoruba	<i>lā</i> 'cut open'	<i>yé</i> 'understand'	'explain'
	<i>rí</i> 'see'	<i>gbá</i> 'take'	'receive'
Sranan	<i>bro</i> 'breathe, blow'	<i>kiri</i> 'kill'	'blow out'
	<i>anga</i> 'hang'	<i>kiri</i> 'kill'	'crucify, hang'

### 3. Historical Perspective

There is good evidence to suggest that in some cases, particular verbs which participate in serial constructions have been 'reanalyzed' as members of another category, i.e., have changed their syntactic role into another one consistent with the sequences in which they typically occur. Instances of change from verb to preposition, verb to complementizer, verb to conjunction, and verb to tense marker appear to have taken place.

#### 3.1. Reanalysis as a Gradual Process

In Sranan, it appears that while *gi* 'give' is a verb for all speakers, for some speakers it is a preposition as well. This is illustrated by (18), which is acceptable to all Sranan speakers, and (19), which shows clefting (a diagnostic for prepositional phrases) which is acceptable to some:

A      ben      tyari      nyan      gi      en      (18)  
 s/he      PAST      carry      food      give      him/her  
 'S/he brought him/her food.'

Na      gi      en      a      ben      tyari      nyan      (19)  
 BE      give      him/her      s/he      PAST      carry      food  
 'It was to him/her that s/he brought food.'

See Muysken 1978, and Sebba 1987 for discussion.)

In (18), the role of *gi* is ambiguous between that of (serial) verb and preposition, but in (19) it can only be

a preposition. Thus there is a situation typical of cases where 'reanalysis' is claimed for serial verbs. The serial use of the verb is not lost, but it is reanalyzed in some contexts and may belong to more than one category in the grammars of some speakers.

Where verbs carry obligatory marking of tense, person, etc., a serial verb in the course of reanalysis will lose these, possibly by stages; and further loss of phonetic material may follow as well. Several such cases of reanalysis of verbs as prepositions, comitative markers, and (in one case) a subordinating conjunction are described by Lord (1973) as having occurred in the Kwa languages Yoruba, Gã, Ewe, and Fon. By a similar process the verb 'say' appears to have become a complementizer in many Kwa languages, and is also used as such in some Atlantic Creoles, although evidence for historical development is lacking in the latter. The situation is complicated by the existence of complementizers homophonous with 'to say' in many Bantu languages, which (though distantly related to Kwa) do not have serial verbs.

There are reports from a number of languages of past tense or perfective markers homophonous with a verb meaning 'finish.' This phenomenon does not appear to be confined to languages otherwise regarded as verb serializing, but where the language has serial constructions the position of the 'finish' tense marker is usually consistent with it having once been a verb in series.

### 3.2 Chinese 'Coverbs'

Chinese has a large class of preposition-like words which are homophonous with verbs with related meanings—for example, *yòng* 'use' (verb), 'with' (preposition); *dào* 'arrive, to'; *zài* 'be-at, at.' These verbs are traditionally termed 'coverbs' because, while functioning as prepositions in one context, they are clearly verbs in another. Chinese grammar provides few criteria for distinguishing between verbs and other categories, particularly if one allows for the possibility of verb serialization. One possibility is that a general reanalysis has taken place at an earlier stage of Chinese, whereby certain [V NP] sequences were reinterpreted as [P NP] sequences, with a corresponding reinterpretation of VP to PP.

In what may be a similar type of reanalysis, the word *bǎ*, originally a verb meaning 'take, hold, use' has become an untranslatable 'object marker,' as in (20)—compare the object-marking 'take' of sentence (15):

Tā	bǎ	chìchē	mǎile
s/he	BA	car	sell-PAST

'S/he sold the car.'

### 4. Serial Verbs: Function and Purpose

In languages where they do occur, serial constructions may carry a heavy functional load, doing, for

example, the work of prepositions and syntactic markers, as well as participating in productive lexical processes and allowing for the expansion of the lexicon through idiomatic collocations. While historically, reanalysis of individual verbs which participate in serial constructions seems to be common, the loss of serial structures altogether is so far undocumented. Rather, certain verbs undergo reanalysis and may have multiple category membership, while the serializing capacity of the language remains otherwise unchanged.

One aspect of serial constructions which has attracted attention recently is their prevalence in creole languages (both of the Atlantic zone and the Pacific, although these are historically unlikely to be connected). Bickerton 1981 regards serial verbs as a *necessary* component of creole grammars, since 'verb serialization is the only solution to the problem of marking cases in languages which have only N and V as major categories.' In other words, serial verbs are a consequence of a language lacking, inter alia, the category 'preposition,' this lack being characteristic, in Bickerton's hypothesis, of the earliest stage of creoles (see *Prepositions and Prepositional Phrases*).

While there are no clear cases of existing languages which use serial constructions but lack prepositions, there is at least one clear case of a verb-serializing language where the number of arguments per verb is strictly limited to two (the subject and one other). In this language, Ijo (of Nigeria), verbs may not subcategorize both a direct and an indirect object. Instead, two verbs are required in series, each with its own object. Here serialization may be seen as compensating for a restriction on phrase structure which would otherwise prevent the expression of certain actions requiring three or more participants.

Thus it seems that some languages, such as English, permit just one main (i.e., nonauxiliary) verb per simple sentence, but allow verbs to have several arguments. Other languages permit more than one main verb per simple sentence, but have tighter restrictions on the number of arguments per verb. Thus different languages map meanings on to syntactic structure in different ways. Serial verbs are one aspect of this.

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## Speech Act Verbs

J. Verschueren

### 1. A Definition

'Speech act verbs' can be defined narrowly or broadly. Under the broad definition, the term covers all verbs which can be used for the description (and sometimes the performance) of types or aspects of linguistic action or verbal behavior; hence the term 'linguistic action verb' (LAV) would be more appropriate, and it will be used in the rest of this article to avoid ambiguity whenever there is no need to be specific. The field of LAVS includes items as diverse as *to soliloquize*, *to talk*, *to write*, *to sentence*, *to apologize*, *to prophesy*, *to predict*, *to assert*, *to swear*, *to plead*, *to command*, *to acquiesce*, *to ban*, *to appease*, *to cheer up*, *to petition*, *to broadcast*, *to negotiate*, *to denigrate*, *to whisper*, and even *to ventriloquize*. Under a narrower definition, speech act verbs (SAVS) are verbs which can be used for the description (and sometimes the performance) of 'speech acts' in the sense of orthodox speech act theory as formulated by John Searle. In other words, SAVS typically focus on an 'illocutionary force' associated with a single utterance of sentence length. From the above list, only *to sentence*, *to apologize*, *to predict*, *to assert*, *to swear*, *to plead*, *to command*, and possibly *to ban* would fit the narrower definition comfortably.

A class of verbs, constituting a lexical field, could be thought of as a more suitable subject for lexical semantics than for pragmatics, and it is indeed the case that the corresponding notion of a 'speech act' is viewed by many as a theoretical construct to be situated in semantics. Yet speech act verbs do not become more interesting than any other lexical field until they are approached from a pragmatic perspective. When they are, they clarify the concepts behind verbal behavior (Sect. 2), they reconfirm the unity of the human race as a communicative community (Sect. 3), they help to resolve a semantic puzzle related to their own use (Sect. 4), and they point the way to some future directions of research in pragmatics (Sect. 5).

### 2. Behavior, Concepts, Verbs

Many prominent speech act theorists (in particular John Searle) deny the existence of an essential relationship between speech acts (and by extension any other meaningful units of verbal interaction) and the verbs which speakers of a given language have at their disposal to identify and describe such acts. The verbs in question are viewed as arbitrary language-specific lexicalizations of the corresponding universal reality which deserves description in its own right.

This stance ignores (a) the fact that using language is a form of social behavior; (b) that any form of social action is essentially meaningful; (c) that this meaningfulness is determined by the framework of

concepts in terms of which the participants interpret their own behavior; and (d) that the corresponding lexical fields, in their language-specific and culture-specific sense, reflect, however imperfectly or incompletely, the conceptual distinctions which members of linguistic or cultural communities habitually make.

A systematic study of SAVS, and of LAVS in general, if undertaken from a profoundly pragmatic perspective such as described above, is therefore an invaluable tool (though only one amongst many) for reaching a better understanding of human verbal communication. Research in this direction has already demonstrated the untenable character of most theoretical classifications of speech acts. Linguistic anthropologists have shown convincingly, for instance, that the prominent position granted to the class of commissive speech acts (promising and the like) in mainstream speech act theory, is a product of culture-specific attitudes. 'Committing oneself to a future course of action' is a type of verbal behavior which has only a minor role to play in many non-Western societies (e.g., among the Ilongots of the Philippines, as described by M. Rosaldo); correspondingly, many languages hardly lexicalize the concept at all. Similarly, speech act theory itself might not have been an interesting discovery for a philosophy formulated in a Polynesian language: in most Polynesian languages the most basic term for 'saying something' is at the same time the most general action verb ('doing,' 'making,' etc.); so the fact that speech and action are one would have been more or less self-evident.

Pragmatics-oriented lexicographical observations of the kind mentioned above have been given further support by ethnographic analyses of actual forms of interaction; thus, to stay with the Polynesian example, detailed studies of interaction in Polynesian societies have shown that the effects of an utterance (e.g., insulting someone) are seen as irreversible (e.g., saying 'I did not mean it that way' does not take away the speaker's guilt); hence, speaking is, first of all, seen as acting, and only secondarily as an expression of personal intentions.

### 3. Universality

Though a pragmatic approach to SAVS draws the attention to cultural relativity in the area of verbal behavior, it does not exclude claims to universality (see *Mood and Modality*; *Basic Principles*; *Mood and Modality: Further Developments*). Indeed, hypotheses implying a complete denial of any common universal core of communicative behavior, would be highly dubious: there must be such a core for humans to be able to understand each other, however imper-



fectly or incompletely. But rather than leading to such implications, recent research on LAVS has opened at least one possible avenue toward a more precise characterization of the nature of such basic universality. In particular, at the conceptually most basic level of the LAV lexicon of individual natural languages (the level at which one finds only items which cannot be adequately defined, in the same natural language, in terms of a different lower-level LAV) strikingly universal tendencies have been discovered. Thus, even though the number of identifiable language-specific 'basic linguistic action verbs' varies from one to about one dozen (e.g., in English, *to say, to speak, to talk, to tell, to ask, to name, to count, to greet, to thank, and to answer*), these verbs show a highly stable pattern across the languages of the world (i.e., the types of items that appear in the list are very restricted, and the individual items belong to half-a-dozen distinct categories and break this pattern only exceptionally).

#### 4. Performativity

A hotly debated issue, about which new proposals have been formulated, is the question as to why some SAVS (e.g., *to order, to promise*) can be used performatively (i.e., performing the named action, as in 'I order you to leave the room') whereas others cannot (e.g., *to lie, to threaten*). Searle's most recent answer to this question (Searle 1989) is that, though some features can be identified which block performativity (such as the indirectness which is part of the meaning of *to hint*, and which is clearly in conflict with the directness which characterizes the performative use of SAVS), a principled answer with reference to the semantics of the verbs concerned cannot be given: according to Searle, it is simply a property of the world we live in that certain types of actions can be performed by merely uttering a sentence whose main verb describes the action in question.

Searle's nonanswer to the philosophical problem is no doubt related to the lack of interest which philosophically oriented speech act theorists traditionally have displayed vis-à-vis verbs, discarding them as merely accidental lexicalizations of a much more interesting universal 'reality.' Though a practical description of the phenomenon of performativity cannot avoid concentrating on features which block performative usage, such features represent constraints on the processibility of the lexical information in the verbs in question, i.e., constraints of a conceptual or cognitive nature. In particular, a performatively used SAV cannot be processed unless the utterance is completely self-referential, i.e., unless the cognitive distance between the act and its description is zero. By contrast, such a distance emerges automatically whenever, e.g., a value judgment is attached to the verb in question. As a case in point, consider 'threatening.' This type of act is not readily

regarded as socially or linguistically acceptable behavior; hence, a negative value judgment is associated with the LAV *to threaten* and a conceptual distance between the act and its description by means of this verb makes itself felt. Therefore, the LAV *to threaten* cannot be used performatively: the act would undermine itself. But by the same token, euphemisms such as *to promise* or *to warn* can be used performatively in the sense of threatening, because the verbs themselves do not carry the same distancing moral evaluation.

Briefly, the constraints on the performative use of a SAV are predictable on the basis of a general, pragmatically inspired model for the description of LAVS which fully takes into account the double action layer involved in performativity, seen as the complete coincidence of an act and its description. In other words, performativity can now be positively defined in terms of a clearly identifiable, conceptual basis.

#### 5. Future Research

Much work remains to be done to make the systematic study of SAVS, and LAVS in general, fulfill its promise of illuminating the nature of the universal conceptual core of all human communicative behavior—a more or less stable set of basic communication concepts shared by speakers of human languages all over the world. Large-scale comparative studies of LAVS, in conjunction with comparative studies of actual verbal interaction, are called for; in such studies not only common aspects but also significant divergences should be focused on for this reason: if it is the case that a universal core makes communication across languages and cultures possible, learning to communicate across languages and cultures is still in the first place a matter of learning the differences.

In addition to this topic of general interest, one can see two profitable directions in which future research on LAVS may develop. First, the pragmatic aspects of the grammatical behavior of LAVS should be explored. After all, the phenomenon of performativity was first discussed not by Anglo-American philosophers and linguists in connection with the philosophical tradition of speech act theory, but by the Slovenian linguist Stanislav Škrabec, when he tried to tackle some problems related to the category of 'aspect' (see *Aspect*) in the performative use of what came to be called SAVS. Second, the cognitive or conceptual approach initiated in the discussion of performativity should be further pursued.

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## Speech Acts and Grammar

K. Allan

A speech act is created when speaker S makes an utterance U to hearer H in context C with the reflexive-intention that H should recognize his/her message in the statement, request, promise, apology, command, etc. This entry deals first with the illocutionary effects of clauses within sentence structure, then with the representation of illocutionary force in grammar.

### 1. Clauses and Illocutionary Force

Clause-type indicates the primary illocution of a clause (see *Moods, Clause Types, and Speech Acts*). The primary illocution of declarative *John died* is ‘S says that *John died*’; of interrogative *Did he?* it is ‘S asks H *Did he?*’; similarly, the imperative ‘S proposes to H that H *Leave immediately!*’; the subjunctive ‘S imagines a world in which *If I were to apply, would they lend me \$100,000?*’; expressive-exclamative idioms are such utterances as *Hi!/Thanks!/Shit!*

Many sentences contain more than one clause. Clauses that occur within the structure of noun phrases share the primary illocution of their governing clause and contribute nothing to the illocutionary force of U. Examples are the restrictive relative clauses underlined in (1), the NP complement in (2), and the adverbial adjunct clauses in (3):

- The plums Joe bought got squashed on the journey home. (1a)
- Here’s the anthology in which Edith’s poem is published. (1b)
- It’s a pity that Eric missed the early train. (2)
- When he arrives, call me. (3a)
- Will you go wherever he does? (3b)
- He spends his money how he pleases. (3c)
- It’s better than we expected. (3d)
- Although he was very tired Harry drove me home fearing I’d be mugged. (3e)

Some adverbial clauses share but also modify the primary illocution of the main clause; for example, *To be frank/honest/serious I don’t promise to come, but I’ll try to do so*: here S is speaking frankly, honestly, or seriously and not ‘notpromising’ frankly, etc. (see *Indirect Speech Acts*). Exclamatory codas like the tags in *So I’m a klutz, am I!?* or *The checkbook wasn’t in your pocket, wasn’t it?!* emphasize the irony but do not otherwise alter the nonliteral illocutionary intention. VP complement clauses also share the primary illocution of the main clause, but occasionally contribute to the illocutionary force of the utterance; for example, *I say I promise to visit tomorrow (you deaf old coot)* can be used to (re)make a promise.

Coordinate, conjoined, and appositive clauses of the same type share the primary illocution of the first clause in sequence: *I admit responsibility for the financial loss and hereby resign from the board* has the primary illocution of a statement and the compound illocutionary points of an admission and a resignation. *Come in but don’t stay long* has the primary illocution of the imperative but compounds an invitation with a prohibition. *I forbid you to go to the pinball parlour; you can go to a movie, though* states first a prohibition and then permission. *Suzy, who loves cats, would never torture one* states information within a denial.

Alternatively, coordinate, conjoined, and appositive clauses may have different primary and indirect illocutions which will carry through to the compound or complex illocutionary point of U. In *If I were to take out a loan, how much interest will I have to pay?* or *How much interest will I have to pay if I take out a loan?* the subjunctive protasis identifies a hypothetical world, in which S takes out a loan; but the main point of the utterance is the question in the apodosis. *Smoke, and you’ll get cancer* uses an imperative telling H to smoke, conjoining it with a statement of the consequence of doing so—together they are intended

to function as a warning not to smoke. *Be frank/Tell me frankly, what do you think?* presents an imperative invitation for H to be frank in responding to the request for information (the same effect is achieved when the clause sequence is reversed: *What do you think? Be frank*). In *I met Ted—Did you know he divorced Monica, by the way?—last night at the club . . .*, the interrogative expressing a yes-no question is located as an appositive clause within the stating of a report.

A positive imperative may take a negative interrogative tag and together they mean 'S proposes to H that H do A unless H does not want to agree to do A'; e.g., *Sit down./won't you?* This is typically an invitation because it has the H-oriented (fall-rise on the tag. Compare the instructional imperative with a positive tag that has the S-dominant (rise-) fall tone: *Sit down./will you* meaning 'S proposes to H that H do A and asks that H agree to do A.' Notice that H can more readily refuse the invitation than the instruction. Negative imperatives are used only with positive tags; for example, *Don't get lost./will you?* 'S proposes to H that H not get lost and asks that H agree not to get lost.' The reason why *\*Don't get lost, won't you* is not heard can be seen from the anomaly of 'S proposes to H that H not get lost unless H does not want to agree to not get lost' or, more simply, 'Don't get lost if you don't want to.'

When 'S says that *p*,' it implies satisfaction of the preparatory condition that 'S believes that *p*'; if S has any doubts, it is cooperative to express them, as in *Jack's in his room, I think*. Or S may venture that *p* but immediately check with H the truth of *p* (perhaps to flatter H) by using a tag question of opposite polarity to the declarative main clause: *Jack's in his room./isn't he? Jack isn't in his room./is he?* Many clauses exist in English to express S's doubts about satisfaction of the preparatory conditions on an illocutionary act; others are *I promise to come if I can. If I've offended you, I apologize. Is Jack in his room, do you know? Can you tell me whether Jack's in today?*

S may signal uncertainty that H will believe him/her: *Would you believe that Joe and Edna have separated?* S's awareness of the potential violation of the cooperative maxim of quantity is signaled by the clause underlined in *Did you know that Max has a new job?* And if S wants to discourse on a topic whose introductory proposition is known to H, s/he will say *Max hates cats, as you know; but his new girlfriend has sixteen!* S may thank H for his/her trouble and/or explicitly seek H's cooperation, as in *I'd be grateful if you could show it to me if you don't mind*. The word *please* means more or less 'do A if it pleases you but don't if not' and thus appears to give H the option of refusing, although H cannot refuse without serious affront to S's face: *Two coffees, please. Please be advised your account is overdue*. S may excuse potentially impertinent questions with

*may I ask* and impertinent statements with *if I may say so*. There are rhetorical requests for permission as in *May I say how happy I am to be here tonight*. S may try to deflect opprobrium by saying *I'm afraid I must ask you to leave immediately, sir. I regret that your application has been unsuccessful*. Alternatively, S is congratulatory in *I am delighted to inform you that your application has been successful*. In all such cases, and many additional ones, there is an illocutionary addition to the utterance whose primary function is to ease social interactive behavior.

Of course, S may cancel an illocution, too, replacing it with another; for example, *I'm sorry I called you an asshole, asshole* or *I advise you, or warn you rather, not to stroke the carpet viper*.

## 2. The Representation of Illocutionary Force in Grammar

It appears that no model of syntax incorporates a representation of illocutionary force; but that was not the case during the late 1960s and early 1970s in the heyday of 'performative analysis' in transformational grammar. Ross (1970: 261) claimed that 'every deep structure contains one and only one performative as its highest clause':

[s[NP<sub>I</sub>] [vpPERFORMATIVE VERB (you)  
[sNONPERFORMATIVE SENTENCES<sub>S</sub>]vp]s]

This was wrong, and so was the claim that a sentential phrase marker can contain one, and only one, performative. Ross (1970) presented 14 arguments based on almost unrelated bits of data in support of the hypothesis that the highest clause of every declarative sentence is a performative verb of stating. Every one of Ross's arguments has been assuredly refuted (along with additional ones in Lakoff 1972 and Sadock 1974) by Anderson (1971), Fraser (1974), Harnish (1975), and Allan (1986: 258ff.). Despite the overwhelming counterevidence, Ross's hypothesis was widely accepted for a decade.

Although Ross introduced the performative analysis within a syntactic framework, many of its champions (e.g., Lakoff and Sadock) discussed it within a kind of grammar known as 'generative semantics'. Generative semantics was named for the fact that its initial symbols represent semantic components set into structures based on a hybrid of predicate logic and natural language syntax; the structures were then rearranged in various ways by transformations before having lexicon items mapped onto them; after that, further transformational rules would rearrange or delete nodes to produce a final derived structure. Because it started from a semantic source, generative semantics could, in principle, represent illocutionary force—which is not a syntactic category, but a semantic, or more accurately, a pragmatic entity. Since the demise of generative semantics, the representation of illocutionary force

## Subordination and Complementation

in grammar has been ignored. The best hope is for someone to incorporate it into some kind of logico-semantic system such as model-theoretic truth-conditional semantics. The first steps in such a program have been undertaken by Searle and Vanderveken (1985) and Vanderveken (1990); but the development of illocutionary logic proceeds independently of the development of model-theoretic semantics.

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## Subordination and Complementation

N. Vincent

It is traditional to distinguish between independent clauses, which may stand alone as complete utterances, and subordinate clauses which occur as part of a larger clause. Within the broader domain of subordination, complementation refers to the special type in which the subordinate clause stands as an argument of a verb or other category.

### 1. Subordination

Typically, subordinate clauses may fill any of the roles of word-level elements in clauses. In the pairs below the (b) sentences have a subordinate clause where the (a) sentences have a single lexical item:

- |   |      |
|---|------|
| Angela reported <i>the result</i> .                             | (1a) |
| Angela reported <i>that her team had won</i> .                  | (1b) |
| <i>The evidence</i> proved John guilty.                         | (2a) |
| <i>That his fingerprints were found</i> proved John guilty.     | (2b) |
| Some people like to go running <i>before breakfast</i> .        | (3a) |
| Some people like to go running <i>before eating breakfast</i> . | (3b) |
| The <i>Parisian</i> student gained the best mark.               | (4a) |
| The student <i>who was from Paris</i> gained the best mark.     | (4b) |

Subordinate clauses have a number of special properties, some of which relate to the particular grammatical circumstances of individual languages, others of which are more general in their applicability. One very widespread property is the existence of a special

class of words that serve to introduce subordinate clauses—English examples are *that, if, when, although*. In traditional grammar these are known as subordinating conjunctions. Another possibility is for word order to vary between main and subordinate clauses. Thus in German, the inflected verb in main clauses occurs in second position: *Joachim liebt das Mädchen* ‘J. loves the girl’, *ich habe das Buch gekauft* ‘I have bought the book, lit. I have the book bought’. In subordinate clauses the verb is in final position: *weil ich das Buch gekauft habe* ‘because I have bought the book’, *ich glaube, daß Joachim das Mädchen liebt* ‘I think J. loves the girl’.

Many languages have a special verb form, often called the subjunctive, which is limited exclusively or in the main to subordinate clauses. Contrast Italian *Giorgio non capisce* (IND) ‘George does not understand’ with *benché Giorgio non capisca* (SUBJ) ‘although G. does not understand’ and *temo che Giorgio non capisca* (SUBJ) ‘I fear G. does not understand’. The difference is that in German all subordinate clauses require the verb-final word order whereas in Italian—and indeed also in German—only some subordinate clauses take the subjunctive. With very few exceptions (e.g. in imperatives) the converse is however true: the subjunctive only occurs in subordinate clauses. Most languages also have a range of non-finite forms variously labelled infinitives, participles, gerunds, etc. which are involved in patterns of subordination and complementation, although it is not easy to extract cross-linguistic features which correlate with the use of these terms within different grammatical traditions. A recently



coined cover term for such items is CONVERB (Haspelmath and König 1995). In other instances a property only holds of a certain type of subordinate clause. Thus, in sequences of main clauses a full Noun Phrase must precede a co-referential pronoun. In *Fred came in and everyone stared at him*, the items *Fred* and *him* may refer to the same person, but in *They saw him and everyone waved at Fred* they may not co-refer. This rule also holds in *Fred said he was feeling hungry* contrasted with *He said Fred was feeling hungry*. Yet in what are traditionally called adverbial clauses, this principle is not operative: *Although he was hungry, Fred refused to eat* and *Although Fred was hungry, he refused to eat* both allow co-reference between *Fred* and *he*. A similar pattern occurs in *That he was feeling hungry surprised Fred*. This so-called 'backwards pronominalization' is thus a diagnostic for subordination in English. On some circumstances in which syntactic and semantic criteria for subordination do not match, see Culicover and Jackendoff (1997).

Traditionally, there are three types of subordinate clause:

- (i) RELATIVES, in which a clause modifies a noun or other element;
- (ii) ADVERBIALS, in which a clause, usually introduced by a conjunction, marks a peripheral relation such as cause, purpose, time, manner, etc. (see van der Auwera 1998 for valuable typological material and analyses);
- (iii) COMPLEMENTATION, in which a clause is an argument of a verb, noun, or other category.

The remainder of this article is devoted to a more detailed examination of the last of these.

## 2. Complementation

The terms complement and complementation are used in both a wide and narrow sense. In the wider sense, which is found in traditional grammar (Matthews 1981: ch. 6), in the recent descriptive framework of Quirk, et al. (1985), and in X-bar theory (Haegeman 1994: ch. 2), complements are elements whose presence and form in a clause or phrase are determined by the principal (head) lexical item of that phrase or clause. Thus, in *Because he was sorry for him, Henry gave his basket of groceries to the old man*, the heads and complements would be as follows:

HEAD	COMPLEMENT
because	he was sorry for him
sorry	for him
for	him
gave	his basket of groceries, to the old man
basket	of groceries
to	the old man

Traditional grammar, and some formal frameworks—but not generative grammar—would also count the

subjects *he* and *Henry* as complements of their respective verbs. A more radical analysis, the so-called DP hypothesis, would in addition regard the nominal constituent *old man* as the complement of the determiner *the*.

Within the framework of generative grammar, although the term complement has the wider sense noted above, the term complementation is generally limited to the study of clauses, finite or non-finite, which serve as arguments typically of verbs but by extension also of other categories such as noun, adjective, and preposition. A similar restriction is found in typological work. Thus, Noonan (1985: 42) writes: 'By complementation we mean the syntactic situation that arises when a notional sentence or predication is an argument of a predicate.' Noonan's definition will be presupposed in what follows.

## 3. The structure of complement clauses

From its inception, generative grammar has made a number of fundamental contributions to teasing out the properties of complement clauses and in offering theoretically coherent and cogent solutions to some of the problems. The discussion has focused around three general topics:

- (a) the properties of the elements which introduce complement clauses, the so-called complementizers;
- (b) the properties of the clause in relation to the traditional dimension of finiteness;
- (c) the expressibility or otherwise of the subject and the form it takes.

See Radford (1997) and Haegeman (1994) for up-to-date textbook introductions that touch on many aspects of these topics. For a seminal study in the framework of standard transformational grammar, see Rosenbaum (1967). Other formal frameworks which have made valuable advances in our understanding of these constructions include Lexical-Functional Grammar (Bresnan 1982), Relational Grammar (Davies and Rosen 1988), Head-driven Phrase Structure Grammar (Pollard and Sag 1994: ch. 3, 7), Categorical Grammar (Chierchia 1988), Role and Reference Grammar (Van Valin and LaPolla 1997), Word Grammar (Hudson 1990: ch. 10.5) and Functional Grammar (Hengeveld 1989). For typological overviews of the diversity of possible complementation patterns and the theoretical issues which they engender, see Givón (1980), Noonan (1985) and Vincent and Börjars (in press).

## 4. Complementizers

This term has been coined within transformational grammar (Rosenbaum 1967) as a label for a subclass of the traditional subordinating conjunctions, roughly those whose function is purely to mark an embedded clause (Eng. *that*, Fr. *que*) but not those which indicate the semantic function of the embedded

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clause (*since, although, because*, etc.). Complementizers may, however, encode properties of the clause they introduce; thus English *if* and *whether* introduce embedded interrogatives, *than* and *as* introduce clausal complements to comparative and equative constructions respectively. Another property which may be expressed in the choice of complementizer is (non-)finiteness. Thus in French (5) has *que* plus a finite clause, while (6) has *de* plus an infinitive:

J'ai décidé que tu ne peux pas rester ici (5)  
'I've decided that you may not stay here'

J'ai décidé de partir demain (6)  
'I've decided to leave tomorrow'

By contrast a number of dialects in Southern Italy and Sicily express mood through the choice of complementizers as well as or instead of through the form of the verb (Ledgeway 1998), while Irish is one of a number of languages worldwide which has a particular item, *gan*, which introduces a negative complement clause. A rather different pattern occurs in Finnish, where the negative element of the embedded clause may move and attach to the complementizer. Thus we find either of the following:

Väität-kö [että kello ei ole neljä]? (7a)  
claim.2SG-Q that clock not.3SG be four

Väität-kö [ett-ei kello ole neljä]? (7b)  
that-not.3SG clock be four

'Are you saying that it is not four o'clock?'

Other possibilities in the C(omplementizer) position in different languages include tense and agreement clitics which pick up arguments of the clause (Arabic, West Flemish). In other words virtually the full range of clausal properties—tense, mood, finiteness, polarity, argument structure—may be encoded in C (Vincent 1993). If the C reflects properties of the clause it introduces and is not just a simple marker of embedding, it is a short step to regarding C as the head of a construction such that the remainder of the clause is its complement (in the X-bar sense alluded to above). Just as *open the window* is a verb phrase with a V as head, so *that John left early* may be seen as a complementizer phrase (CP) with C as head. This solution is argued to be preferable to the earlier one where a combination of complementizer (C) and a sentence (S) was seen as a special kind of sentence (labelled S'), since the distinction between S and S' does not correspond to that made elsewhere in the X-bar system.

### 5. Finiteness

If C is taken to be head of S', thus relabelled CP, it is natural to ask if there is a similar head position for the simple S. It can at once be seen that the elements listed above as occurring in C position may also, in different languages, be found clustering around the auxiliary or I(nflection) position. In English for example modal

auxiliaries, *have* and *be* have always been argued to occupy a special slot before the VP, and negation is one of the items that is attracted to this position—hence contracted forms like *mustn't*, *won't*, etc. This I(NFL) position may be thought of as the head of what remains once the C is separated off so that we have the layered structure expressed by the following rules:

$$\begin{array}{ll} \text{CP} \rightarrow \text{Spec} & \text{C}' \\ \text{C}' \rightarrow \text{C} & \text{IP} \\ \text{IP} \rightarrow \text{Spec} & \text{I}' \\ \text{I}' \rightarrow \text{I} & \text{VP} \end{array} \quad (8)$$

A structural puzzle is solved and the link between C and I further enhanced on the assumption that when auxiliaries invert in English to presubject position, where they actually alight is the C slot.

Note that some verbs take complements which are not introduced by any complementizer, as in *They believed her to be a genius*. Here the sequence [*her to be a genius*] may be taken to be an IP not contained in a CP. We thus explain the absence of an overt C, provide a location for the infinitival *to* as the exponent of a non-finite I, and hypothesize that the unusual property of the subject (*her*) being marked with the accusative results from its being in the domain of the higher verb *believe*: so-called E(xceptional) C(ase) M(arking). It would be natural then to explore the possibility that when the embedded clause does not contain *to*—the so-called 'bare' infinitive—this is to be attributed to the absence of an I position and therefore the layer of structure determined by the presence of I. Examples are the constructions with *see*, *hear*, etc.: e.g., [*see [the children play]*]. A constituent made up of a subject and predicate but with no inflectional material is known as a SMALL CLAUSE. More layers still can be introduced into the model by splitting I into separate projections such as T(ENSE)P, AGR(EEMENT)P, NEG(ATION)P, etc. (see Cinque 1999 for the most fully articulated proposal to date along these lines). Rizzi (1997) proposes that the same logic be extended to the complementizer system: the so-called 'split C hypothesis'. On this view, the outermost projection in the C-system is labelled the FORCE PHRASE, and represents the fact that clauses may express a range of illocutionary forces; the innermost projection is the FIN(ITE-NESS) PHRASE, thus developing the idea that finiteness is intrinsically a C-level rather than, as is more usually argued, an I-level property (for a more detailed review of the issues here, see Vincent 1998). One currently controversial solution to the apparent redundancy of proliferated structure entailed by hypotheses such as these is to limit its occurrence through a system of interacting constraints (Grimshaw 1997).

A rather different notion of layered clause structure in the area of complementation is found in Functional Grammar (Hengeveld 1989) and Role and Reference Grammar (Van Valin and LaPolla 1997: chs. 8, 9). An alternative approach in which the differences between

finite and non-finite forms are derived from the featural composition of the items in question is developed in Anderson (1997: 252–91).

## 6. Expression of Subject

The small clauses and plain IP patterns just discussed are unusual in that they are non-finite complement structures with overtly expressed subjects. Normally only finite complements have overt subjects: e.g. *Peter persuaded Bill that they should visit Paris*. Moreover, such full finite clausal complements are in systematic alternation with infinitive complements with no expressed subject: *Peter persuaded Bill to visit Paris*. The standard generative account here is to see the subject of the infinitive as consisting of the unrealized pronominal item labelled PRO. This element cannot be phonetically realized because the I in such examples is the non-finite marker *to*, which is hypothesized not to have the capacity to license an item in subject position. At the same time an empty C position prevents the influence of the governing verb *persuade* from assigning the accusative case in the way seen with *believe* above. The technical ramifications here are considerable but the point is that the infinitive clause [*to visit Paris*] in the foregoing example is regarded as a full CP distributionally exactly parallel to [*that they should visit Paris*]. Such an analysis obviously requires extensive use of empty categories and various conditions licensing their existence (Radford 1997: ch. 4). Alternative accounts which seek to make do without empty categories have been developed within the frameworks listed in Sect. 3 above.

There are a number of other ways in which a language may come to have an overtly expressed subject of a non-finite form. One found in English is a special element whose only role is to license the expression of the subject. Thus, *for* in *For John to leave now would be disastrous* is usually treated not as a preposition but precisely as occupying the C position and providing the case for the subject just as *believe* does in the ECM examples discussed above. In other languages there are ways to license the subject from inside the clause. One such is Portuguese and some other Romance languages, where the infinitive can carry agreement markers for person, and these then permit nominative subjects even after elements that are clearly prepositional: e.g., *sem* ‘without’ in (9d):

- (a) [<sub>IP</sub>Eles aprovar<sub>EM</sub> a proposta] será difícil (9)  
‘They to-approve-Agr the proposal will be difficult’
- (b) Será difícil [<sub>IP</sub>eles aprovar<sub>EM</sub> a proposta]  
‘It will be difficult they to-approve-Agr the proposal’
- (c) Nós lamentamos [<sub>IP</sub>eles ter<sub>EM</sub> recebido pouco dinheiro]  
‘We regret they to-have-Agr received little money’

- (d) A Maria entrou em casa [<sub>PP</sub> sem [<sub>IP</sub> eles ouvir<sub>EM</sub>]]  
‘Maria entered the house without they to-hear-Agr’

In all the examples in (9) *eles* is the nominative form of the 3rd person plural pronoun (Ledgeway 1998, Vincent 1998). Clause internal licensing of overt infinitival subjects is also found in Welsh (Tallerman 1998), where the relevant licensing element is the inflectional particle *i*, as in (10):

- Mae’n debyg i’r bws fynd (10)  
is-PRED likely PART-the bus go  
‘It is likely that the bus has gone’

In direct contrast are languages such as Latin, where a standard form of complementation is the so-called Accusative and Infinitive, as in (11):

- (a) credo Caesarem trans flumen (11)  
transisse  
believe.1SG Caesar-ACC across river  
cross-PERF-INF  
‘I believe C has crossed the river’
- (b) cupio me esse clementem  
wish.1SG me-ACC be-INF merciful-ACC  
‘I wish to be merciful’

Such examples cannot involve case from outside the clause since the clause may be a complement to a verb like *credo* ‘I believe’, which normally takes the Dative case, or to adjectives such as *certum est* ‘it is certain’, which take no case-marked argument. In other languages the same occurs with other cases; for example Lithuanian has a dative and infinitive construction. The relevant principle here seems to be that a non-finite subject may occur in a default case, where which case (if any) functions in this role may vary from language to language.

## 7. Clause Merging

Section 5 showed how the complement of a verb could be a constituent of varying sizes from small to full clauses. In all such examples, however, it is clear that we are dealing with two separable constituents: the complement and the item which governs the complement. A number of constructions in natural language suggest the possibility of a greater degree of integration (or ‘binding’ in the sense of Givón 1980—very different from the Chomskyan sense of that term) or merging. One well known example is so-called negative raising in English. The negation on *believe* in *I don’t believe John will ever come, will he?* not only logically belongs with *come*, but also determines the form of the negative polarity item *ever* and dictates the contrasting polarity of the positive tag question *will he*. Part of the lower clause, then, is located in the higher one.

Raising of another kind was proposed for examples such as *The police believe Fred to be a liar* by Rosenbaum (1967); the subject of the embedded

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clause *Fred* was argued to move to become object of the main clause. Such an analysis is still preserved under the name ASCENSION in Relational Grammar. The facts of linear order in English are such that it is not clear whether in these examples the subject of the embedded clause has remained where it is and acquired accusative case by some exceptional means or whether it really has become the object. In the following Maltese example the situation is less equivocal:

- |     |                      |               |        |
|-----|----------------------|---------------|--------|
| (a) | irrid-kom            | taqraw        | (12)   |
|     | 1PSSUBJ-want-2PPLOBJ | 2PPLSUBJ-read |        |
|     | 'I want you to read' |               |        |
| (b) | irrid                | li            | taqraw |
|     | 1PSSUBJ-want COMP    | 2PPLSUBJ-read |        |
|     | 'I want you to read' |               |        |

In (12a) there are two finite verbs, the first of which bears a second person plural object suffix (cf *qasam-kom* 'he broke you (pl)') and no complementizer is possible. In (12b), the first finite verb, *irrid* 'I want', does not have the pronominal suffix and the complementizer is obligatory.

Here the barrier between the clauses in the form of the complementizer is absent and one argument from the lower clause is also expressed in the upper clause, but the fact that both verbs are finite still suggests two clauses. An even tighter unity is exhibited when the second verb is non-finite and its arguments appear attached to the higher verb. This is the case with so-called restructuring constructions in Romance. Thus Italian:

- |     |                      |              |        |
|-----|----------------------|--------------|--------|
| (a) | voglio               | andarci      | (13)   |
|     | want.1SG             | go.INF-there |        |
|     | 'I want to go there' |              |        |
| (b) | ci                   | voglio       | andare |
|     | there                | want.1SG     | go.INF |
|     | 'I want to go there' |              |        |

Here the clitic argument of the infinitival verb, the locative *ci*, is attached to the infinitive in (13a) but to the inflected verb in (13b). In this respect (13b) behaves as if it has a complex verb form in a simple clause rather than two separate clauses, and this is borne out by the fact that to make a compound tense the auxiliary in (13b) must be the one appropriate to *andare*, namely *essere* 'be', not the one appropriate to *voglio*, which would usually take *avere* 'have'. This 'restructuring' (the label is due to Rizzi 1978) is optional with verbs like *volere* 'to want', *potere* 'to be able to' and others but a related obligatory effect is to be observed with the causative verb *fare* 'to make'. In fact in Italian and kindred languages the nexus of *fare* + Infinitive always behaves as if it were a single compound verb in a single clause. This complete integration of two verbs, which may cause interesting shifts of case marking since the arguments of the dependent infinitive have to be added to the Agent argument introduced by *fare*, is known as CLAUSE UNION. For a detailed account and an analysis in the

framework of Relational Grammar, see Davies and Rosen (1988). Causative and other such constructions have also been analyzed in terms of the concept of a COMPLEX PREDICATE (Alsina, Bresnan, and Sells 1997).

Davies and Rosen propose to treat the causative, always thought of traditionally as bi-clausal, at least in underlying structure, as monoclausal throughout. Within generative grammar, the trend has, if anything, been the reverse. Traditional auxiliary + verb sequences have been claimed to involve a small clause as complement of the auxiliary. On such a view *John may leave soon* is derived from  $[[\emptyset] \text{ may } [John \text{ leave soon}]]$ , and *John has left* from  $[[\emptyset] \text{ has } [John \text{ left}]]$ . This style of analysis needs to be explored further in the light of languages where virtually every verbal construction is a kind of complementation, since the class of finite verbs is a closed class, to which are added various non-finite (participial or converb) forms of the verb (cf Cook 1988). Another type of verb-verb nexus which is not traditionally treated as complementation but which overlaps with it in a number of respects is verb serialization (cf the contributions in Joseph and Zwicky 1990).

### 8. Verb Classes

The examples in the previous section touched on the fact that particular analyses are appropriate for particular types of verb, where the types of verb can be defined semantically. This is clearly a widespread phenomenon in the area of complementation. For example, the Latin accusative and infinitive construction is restricted for the most part to the complements of verbs of saying and thinking (*verba dicendi et putandi*) and to a number of adjectives. In Italian the restructuring effect is found with modals, motion verbs and aspectuals; in English the small clause complements are typical of perception verbs; and so on. Many of these semantic classes are recurrent across languages. Thus, perception verbs often have a special complementation pattern of their own, a fact which is plausibly to be attributed to their semantics. This does not mean everything is solved, of course. It is not clear why for example causatives and perception verbs often pattern similarly, though this again is a well attested observation across a number of language families. There are undeniably correlations between semantic classification of predicates and the ways they form their complements but it is unwise to assume too direct a connection between the two. For example, it is sometimes suggested that the least marked type of complementation for a verb of saying would be the one that was nearest to direct speech. Yet in Latin, which does have various types of finite complementation, these are, as we have already noted, typically not preferred with verbs of saying and the accusative and infinitive is used instead. One brave attempt to be as exhaustive as possible in seeking the semantic bases of complementation in a



language is to be found in the relevant sections of Dixon (1991).

### 9. Complements of Categories other than the Verb

Finite and non-finite clauses can of course also depend on heads other than verbal ones. Parallel to *he hoped that it would rain*, we can have *his hope that it would rain*; beside *he wished to succeed* we find *his wish to succeed*. Indeed it might seem on the basis of English as if there is very little else to say. In some languages, however, the distinction is not so clearcut. Comrie and Horie (1995) report that in Khmer there are two complementizers that introduce complements of nouns, *thaa* and *dael*. The former also serves as a complementizer for verbal constructions while the latter also serves to introduce relative clauses. There seems to be no underlying motivation behind the split in the classes of nouns and it is therefore an arbitrary property for each noun to know which complementizer is appropriate. Put another way, the distinction between relative clauses and complement clauses, which is so well delineated in English is blurred in some languages.

The postulation of a complementation patterns for prepositions in line with those for other categories serves to eliminate a traditional category. We do not need to say that *after* in *after the war* is a preposition, that *after* in *after we had left* is a conjunction, and that *after* in *they came after* is an adverb. It suffices to say that *after* is a member of the category P which can subcategorize for either a sentence or a noun-phrase or neither, just as verbs like *believe* can. At the same time we gain a more general distributional statement since we can now say that all the so-called major categories (N, V, A, P) can take sentential complements.

### 10. Complementation and Nominalization

The present treatment has deliberately concentrated on complementation as expressed in various kinds of full or reduced clausal structure. We should note however that there is a close link both structurally and often etymologically between the traditional non-finite verb forms and nominal or adjectival formations. For example the Latin infinitive ending in *-re*, whence the infinitives in *-r(e)* of the Romance languages, is in origin the locative case of verbal noun. In English too the disentangling of the nominal, verbal and adjectival properties of the various forms that end in *-ing* continues to keep grammarians busy. The complementation patterns of Celtic languages make particularly frequent use of items that are known traditionally as verbal nouns. Thus in Welsh:

- (a) Mae Rhiannon yn anu 'r anthem (13)  
is Rhiannon in sing the anthem  
'Rhiannon is singing the anthem'
- (b) Clywais i 'r canu  
heard.1SG I the sing  
'I heard the singing'

In (13a) the verb-noun *canu* takes a direct object and enters into an aspectual periphrasis with the particle *yn*, and so looks verbal, while in (13b) it is preceded by the definite article and acts as the object of the verb *clywais* 'I heard', both clear nominal properties.

In other languages, verbal nouns both take case endings to signal their role in the clause and assign cases to their own dependents. The Latin supine is a classic example:

- legatos ad Caesarem mittunt (14)  
rogatum auxilium  
envoy.ACC.PL to Caesar.ACC send.3PL  
ask.SUP.ACC help.ACC  
'they send envoys to Caesar to ask for help'

*Rogatum* is the supine of the verb *rogare* and is in the accusative or goal case to express purpose. At the same time its dependent noun *auxilium* is in the accusative as it would be after any other form of the verb *rogare*. For a typological survey of nominalized complements, see Koptjevskaja-Tamm (1993) and for a discussion of the theoretical issues Borsley, Kornfilt and Vamling (in press).

Compare by way of conclusion the following Warlpiri example, where the purposive suffix *-ku* is in origin the dative case marker:

- yula-nja-ku jati-jarri-ja (15)  
cry-NOM-PURP start-INCHOATIVE-PAST  
'She burst into tears' (lit. started to cry)

A more dramatic example is the following from the Australian language Kayardild, in which the finite verb *thaa-thuu-nth* 'will return' bears the 'oblique' suffix (labelled here COBL for 'complementizing oblique').

Moreover, the argument of that verb and the modifier of the argument agree and take the same suffix, which is therefore distributed over every word of the clause:

- ngada murnmurdawa-th (16)  
I-NOM be glad-ACT  
[ngijin-inja thabuju-ntha thaa-thuu-nth]<sub>COBL</sub>  
my-COBL brother-COBL return-FUT-COBL  
'I am glad that my brother is coming back'

Austin (1988) is a fine collection of these and other intriguing phenomena relating for the most part to complementation and indicates how much there is still to understand not only about the way unfamiliar languages work but about how the evidence from unfamiliar languages may force us to reconsider our analyses of what we thought to be familiar languages

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## Switch-reference and Related Phenomena

L. Stirling

One of the most important purposes for which human beings use language is to describe a sequence of related events, for example, in telling a story, reporting what happened, making plans, or explaining how to do something. The term 'switch-reference' refers to one of the ways available in some languages of the world for specifying the links between events in discourse sequences such as these. The 'switch-reference system' of such a language provides its speakers with a set of verb markers from which they must choose, to indicate whether or not the events share the same major protagonist. Often the switch-reference system

also enables speakers to distinguish other ways in which the events may be related, for example, with respect to their setting in time and space or a causal connection between them. The precise definition of switch-reference has been considered a difficult and controversial question. This is partly because the grammatical systems which the term has been used to label differ in their formal characteristics depending on whereabouts in the world the language is spoken, and partly because it has been hard to provide a precise and general delimitation of the meanings and functions of switch-reference systems.

### 1. 'Switch-reference'

The term switch-reference was coined by William Jacobsen to describe systems which indicate relationships of identity or difference between participants playing similar roles with respect to successive narrated events (Jacobsen 1967). In a more specific description of the Hokan–Coahuiltecan family of Native American Indian languages, he gave the much-quoted definition: 'Switch-reference consists simply in the fact that a switch in subject or agent (...) is obligatorily indicated in certain situations, by a morpheme, usually suffixed, which may or may not carry other meanings in addition' (Jacobsen 1967: 240).

Example (1) illustrates the switch-reference system found in the Native American language Mojave (Munro 1980: 145):

- |  |                                   |     |
|--|-----------------------------------|-----|
| (a) nya-isvar-k<br>when-sing-SS<br>'When he <sub>i</sub> sang, he <sub>i</sub> | iima-k<br>dance-TENSE<br>danced.' | (1) |
| (b) nya-isvar-m<br>when-sing-DS<br>'When he <sub>i</sub> sang, he <sub>j</sub> | iima-k<br>dance-TENSE<br>danced.' |     |

The Mojave switch-reference system consists of two morphemes, *-k* and *-m*, which are suffixed to the verb of an adverbial clause such as 'when he sang' in order to indicate whether the subject of that clause is the same as the subject of the main clause. If *-k* is used, the same reference is indicated, whereas if *-m* is used, a different reference is indicated.

The abbreviations 'SS' and 'DS' in example (1) are commonly used to indicate the 'same subject' (or coreference) marker and the 'different subject' (or disjoint reference) marker in the switch-reference system. The two clauses related by switch-reference are also distinguished terminologically. The clause containing the verb with switch-reference marking (*nya-isvar-k/m* in (1)) is normally referred to as the 'marked' or 'dependent' clause, and the other clause (*iima-k* in (1)) is called the 'controlling,' 'independent,' or 'reference' clause. Jacobsen (1983: 152–54) gives a historical survey of terminological variants.

### 2. The Origins, Distribution, and Typology of Switch-reference Systems

As well as being found in numerous Native American languages, switch-reference systems have been identified in many of the non-Austronesian languages spoken in Papua New Guinea, and in a number of Australian languages. Outside these areas only isolated reports of switch-reference have been made, for a small number of South American, Austronesian, African, and northeast Caucasian languages.

Switch-reference is a type of grammatical phenomenon subject to areal diffusion, that is, switch-reference systems tend to be found in geographically adjacent languages which need not be related genetically and which may differ in the way the switch-

reference relation is marked. This has been shown for Native American languages (Jacobsen 1983) and for Australian languages (Austin 1981). Across languages, the origins of switch-reference morphemes are diverse. For particular languages or language groups the origins of the morphemes may be suggested by their homophony with other grammatical markers in the language. For most Australian languages and some Native American languages, switch-reference morphemes are related to nominal case inflections, with SS marking being associated with nominative or ergative case and DS marking associated with locative or allative case (Austin 1981). Switch-reference markers may also be derived from verbal agreement markers, tense or aspect, subordinating clitics or conjunctions, and a number of other sources.

The grammatical phenomena identified as switch-reference in these geographically and genetically diverse languages share the characteristic that for some types of syntactic relation between clauses in the language, a choice of morphemes is obligatorily made and used to indicate reference relations between nominal arguments in the two clauses so related. These morphemes are situated not on the nominal arguments so related but on the verb, or more rarely, they appear as independent morphemes, normally in the position for clausal clitics or conjunctions. However, there are some characteristic differences between the types of systems which are found in different regions, and the more important of these will be discussed in Sects. 2.1, 2.2, and 3.

#### 2.1 Typological Characteristics of Switch-reference Languages

For most languages with switch-reference systems, the order of the major clausal constituents follows the pattern subject–object–verb (SOV). Languages with this pattern of clausal constituent ordering tend to prefer suffixation to prefixation and generally order modifiers before heads, hence syntactically dependent clauses come before independent main clauses. For this reason, in most languages with switch-reference systems the marking is by suffixation on the verb of a syntactically dependent clause which precedes the controlling clause. When switch-reference occurs in a language which does not have SOV constituent order, the ordering characteristics of the switch-reference marking also alter. For example, the Austronesian language Lenakel has SVO constituent ordering, and switch-reference is by prefixation with the switch-reference marked clause following the independent main clause.

#### 2.2 The Syntactic Relation Between the Two Clauses

The switch-reference relation holds between two clauses which are linearly adjacent and syntactically related. The controlling clause is never syntactically subordinate to the marked clause.

## Switch-reference and Related Phenomena

Cross-linguistically, there are two major types of syntactic relation in which the two clauses may stand. The first is where the marked clause is subordinate to the controlling clause. It may be an adverbial clause, a complement clause, or a relative clause. This type of relation is most prevalent in the switch-referencing languages of North America. The second type is where the marked clause and the controlling clause are in a looser relation of clause chaining, parataxis, or conjunction. In clause chaining constructions a string of dependent medial clauses is followed by a final independent clause. The medial clauses are marked for switch-reference but lack some or all of the verbal inflection characteristic of independent clauses, such as tense, mood, and agreement. The final clause is not marked for switch-reference but does have finite verb inflection, and this is assumed to apply to the entire clause chain. Clause chains may be very long—up to twenty clauses per chain have been noted in the literature. This second type of relation between switch-reference clauses is characteristic of Papuan languages. Example (2) is from the Papuan language Amele (Roberts 1987: 101) (morphemic glosses have been considerably simplified):

- (2)
- |           |        |       |       |           |        |       |          |                 |
|-----------|--------|-------|-------|-----------|--------|-------|----------|-----------------|
| ija       | Malolo | uqa   | na    | ka        | jic    | anag  | na       |                 |
| I         | Malolo | he    | his   | car       | road   | main  | at       |                 |
|           |        |       | ono   | nu        | sumudi |       |          | bibiligin       |
|           |        | there | for   | I         | be     | _____ | awaiting | _____ it-SIM-DS |
|           |        |       |       |           | neceb  |       |          |                 |
|           |        |       |       | he        | _____  | come  | _____    | down-SEQ-DS     |
| tobocomin |        |       |       | belowan   |        |       |          |                 |
| I         | _____  | climb | _____ | up-SEQ-DS | we     | _____ | two      | _____ went      |
|           |        |       |       |           |        |       |          | _____ off       |

'While I waited for Malolo's car there at the main road, he came down. I climbed in, we two went off.'

The abbreviations SEQ and SIM stand for 'simultaneous' and 'sequential' temporal relations between the event described by the clause so marked and the event described by the following clause. Sect. 3 discusses the incorporation of such meaning distinctions into switch-reference systems.

Switch-reference marking is normally restricted to some subset of the range of clause linking syntactic relations the language exhibits. Within the switch-reference marked range of relations, switch-reference systems may distinguish distinct pairs of morphemes corresponding to different types of syntactic relations between the two clauses. For example, Chickasaw has distinct pairs of SS and DS markers for clauses in subordinate as opposed to paratactic relations. Thus, choice of a particular switch-reference morpheme may indicate the type of syntactic relation between the two clauses as well as the other functions it has.

### 3. Problems of Definition: The Functions of Switch-reference Systems

All languages have ways of 'tracking the reference' of nominal arguments through a stretch of discourse,

and most have different ways of treating continuity and discontinuity of major arguments in syntactically related clauses. For example, in English a repeated subject in a subordinate or conjoined clause is typically omitted, while a new subject is given overt expression. Switch-reference has been seen as belonging to this broad functional category of reference tracking or topic continuity (Givón 1983), and the desire to distinguish switch-reference from other devices for tracking the reference of nominal arguments through the discourse has led to a concern with definitional issues. For example, in 1981 a major symposium on switch-reference was held at Winnipeg, Canada, and took as its goal the delimitation of switch-reference and identification of its parameters of variation cross-linguistically (Haiman and Munro 1983).

Two ways in which switch-reference is clearly distinguishable from other reference tracking devices are that switch-reference is marked not on the nominal arguments whose reference is tracked but elsewhere in the clause, and that switch-reference morphemes must occur regardless of whether they are actually required for disambiguation of reference, i.e., when the two NPs related are both third person.

A narrow general definition of the function of switch-reference marking which has been assumed quite widely is that the switch-reference morphemes indicate obligatory coreference or disjoint reference between the subject NPs of the two clauses in the switch-reference relation. Henceforth the term 'pivot' will be used to identify the nominal arguments which are related as having coreference or disjoint reference by the switch-reference marking. This characterization thus restricts the domain of the switch-reference relation to pivots in a particular grammatical function, that of subject, and restricts the relation indicated to that of referential binding. Such a definition highlights the *exotic* nature of switch-reference, as marking information about nominal reference via a verbal category (Haiman and Munro 1983: ix).

Although pervasive, such a characterization of switch-reference fails to capture its functional complexity, as is shown in Sects. 3.1 and 3.2. More recent general characterizations of the function of switch-reference systems have tried to accommodate the whole range of its functions. Switch-reference is seen as having the clause as its domain, and as expressing a relationship between two clauses, or between the events described by two clauses, which indicates continuity or discontinuity between them along a number of parameters. The most important parameter is reference of the major protagonist, but other parameters may be distinguished, such as the temporal and spatial location of the event and its status as having actually occurred or not (Roberts 1988; Stirling 1992). The fact that switch-reference is



not marked on nominal arguments reflects the fact that it provides information about the clause as a whole.

### 3.1 *The Pivot NPs and the Referential Relation Between Them*

Examples of switch-reference systems which do not simply relate subjects but also NPs in other grammatical relations have been identified in a few Native American languages including Capanahua (Jacobsen 1967), and in a number of Australian languages including Warlpiri (Simpson and Bresnan 1983). Capanahua is notable because nonsubject arguments in both the marked and the controlling clause are important: it has six DS suffixes, two of which imply the identity of the subject of the marked clause with the object of the controlling clause, and one of which implies the identity of the object of the marked clause with the subject of the controlling clause. Better described is the Warlpiri system, where the subject of a switch-reference marked infinitival clause is related by the switch-reference marking to some argument of a preceding controlling clause. The four Warlpiri switch-reference morphemes and their functions are listed below:

- (a) *-karra*: the subject of the marked clause is coreferential with the subject of the controlling clause.
- (b) *-kurra*: the subject of the marked clause is coreferential with the object of the controlling clause.
- (c) *-rlajinta*: the subject of the marked clause is coreferential with that of the controlling clause, and the event described by the controlling clause is an *accidental* consequence of the event described by the marked clause.
- (d) *-rlarni*: the subject of the marked clause, if not overt, is the same as the oblique dative argument of the controlling clause.

In other languages the definition of the switch-reference pivot must appeal to the notion of agentivity. For example, the switch-reference pivot may be required to be not merely the syntactic subject, but agentive as well. Such a characterization of the pivot is necessary because in the languages in question, when the controlling clause is an impersonal construction lacking an agentive subject, the switch-reference marking is usually SS even if the subjects of the two clauses are not coreferential. That is, the switch-reference system uses DS marking for a new agentive subject and SS marking to indicate that no new agentive subject has been introduced. More rarely it has been proposed for some languages that switch-reference operates simply in terms of the agent of the clause, whatever grammatical function it fulfills.

Whether the pivot NPs are defined in terms of grammatical function or semantic role, the relation

between them may be complicated if they are neither strictly identical nor completely different, that is, whether the reference of one NP includes that of the other. Such a situation typically occurs whether the inclusive NP is plural and the other NP identifies some member(s) of the set, but also includes cases where there is a part-whole relationship between the referents of the two NPs. In such cases, SS marking is frequently used, either as a matter of necessity or on the basis of the way the speaker chooses to present the events. In some languages, including many Native American languages, it makes no difference whether the inclusive NP is in the marked or controlling clause; SS marking is possible in either case. In other languages, including many Australian and Papuan languages, SS marking is restricted to cases where the inclusive NP is in the marked clause; if the relation of inclusion is the other way round with the inclusive NP in the controlling clause, DS marking must be used. There appear to be no languages where the reverse is true, i.e., SS marking allowed just when the inclusive NP is in the controlling clause. Sometimes the relation of inclusion may be determined by cultural factors such as kinship relations rather than simply by referential relations (Wilkins 1988: 166).

### 3.2 *Nonreferential Functions of Switch-reference Systems*

Switch-reference systems frequently offer more than one pair of morphemes to choose from, and the additional meaning typically concerns the temporal relation between the two events. The most common distinction is whether they occur simultaneously or in temporal sequence. (Example (2) in Sect. 2.2 illustrated a system with such a distinction.) In this respect switch-reference systems can be compared to other verbal morphology whose sole function is to distinguish simultaneous from sequential events, as in Swahili, where the prefix *ka-* indicating a sequence of consecutive events is contrasted with the prefix *ki-* which indicates interrupting contingent or simultaneous events (Hopper and Thompson 1980: 281). Other meanings may be associated with particular choices in a switch-reference system as well. These tend to concern logical or epistemic relations between the events, involving notions of expectation, causality, condition, and contrast.

In addition, in some languages the DS marker may be used even though the switch-reference pivots are coreferential, to indicate a discontinuity in some other parameter of the event sequence being described. For example, the events may differ in spatial location, in temporal location, in whether they actually occurred, or in whether they have an agentive controller. A cross-linguistic survey of such cases is given in Stirling (1992) and they are also discussed in Roberts (1988).

#### 4. Formal Theories of Switch-reference

Recent work on switch-reference has given rise to a number of formal theories which claim to be generalizable to switch-reference systems across a range of different languages.

Finer (1985) proposes a 'formal grammar of switch-reference' within a version of government binding theory called generalized binding. His account is based on a subset of switch-reference systems from Native American languages and is a formal encoding of the view that switch-reference is a relation between subject NPs which happens to be mediated by other elements of the clause. He assumes that switch-reference is a syntactic relation to be accounted for by the binding theory in an analogous way to reflexive pronouns. Information about switch-reference starts off encoded as an abstract operator in the ultimately unrealized constituent of COMP, with the SS marker treated as a generalized anaphor while the DS marker is seen as a generalized pronominal; the syntactic-semantic information encoded by the abstract operator percolates through to the subject nominals of the two clauses and has the effect of marking them with identical or disjoint referential indices, while the phonological information affects the realization of the verb.

Tsujimura (1987) proposes a theory for switch-reference within the framework of categorial grammar. She formalizes the insight that SS can be considered as 'agreement' and DS as 'disagreement.' She shows how her account can handle the switch-reference systems of Tairora, Hopi, and Warlpiri. In particular, she provides an account for switch-reference systems which mark reference relations involving nonsubject NPs.

In Stirling (1992) a formal theory of the syntax and semantics of switch-reference is proposed within the framework of unification categorial grammar, which associates a syntax based on categorial grammar with a semantics based on discourse representation theory. This account formally encodes the idea that switch-reference has the clause as its semantic domain and indicates agreement or disagreement between parameters of the events described by the clauses it relates. The formal treatment is illustrated with an account of the switch-reference system of the Papuan language Amele, and is claimed to generalize to a range of switch-reference systems, in particular clause chaining systems and systems with complex nonreferential functions.

Considerable work has also been done on switch-reference and related phenomena within the framework of lexical functional grammar, as part of a general theory of anaphoric binding and control (Simpson and Bresnan 1983).

#### 5. Related Phenomena

The term 'obviation' has been used to describe switch-reference systems of the Warlpiri type, which

tracks other arguments in the clause as well as subjects (Simpson and Bresnan 1983). Simpson and Bresnan see this system as part of the more general phenomenon of 'control,' i.e., restrictions on the interpretation of unexpressed arguments in a syntactically dependent clause in terms of the interpretation of arguments in the main clause. Obviation systems are ones which exclude certain possible controllers.

This use of the term obviation should be distinguished from its use in work on Algonquian languages, in which personal pronoun systems make a distinction between a 'proximal' third person which is central to the discourse and an 'obviative' third person (also called a 'fourth person') which is peripheral to the discourse.

Similar to both obviation and switch-reference are 'logophoric' systems. In these a NP in a dependent clause takes a special pronominal form to indicate its coreferentiality with a NP in a controlling clause. The dependent clause is constrained semantically to be a context of reported speech or mental or psychological state.

Switch-reference marking of the clause chaining type is related in complex and interesting ways to 'serial verb' constructions.

#### 6. Future Work

The most urgently needed future research is additional detailed descriptive work to be done on switch-reference languages at the discourse level, so that the interaction between the choice of switch-reference morpheme and semantic, pragmatic, and stylistic factors may be properly determined.

*See also:* Logophoricity and Long-distance Reflexives; Control; Serial Verbs.

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## Tense

B. Comrie

Tense is a grammatical category referring to the location of situations in time; it is the basic grammatical category which, together with lexical and other indications of temporal ordering, enables the hearer to reconstruct the chronological relations among the situations described in a text and between them and the speech situation.

### 1. The Nature of Tense

There are two important facets to the notion of 'tense.' First, from a formal point of view, tense is a grammatical category, usually expressed overtly on the verb. Second, from a semantic viewpoint, tense serves to locate situations (events, states, processes, actions) in time, for instance, as overlapping some other time point or period, or as being before or after some other time point or period, or even as being soon or long before or after some other time point or period. Both facets must constantly be borne in mind, since there are other grammatical categories whose meaning comes close to, but must nonetheless be distinguished from, that of tense, while there are means other than grammatical categories of locating situations in time.

Location in time is one of the two main facets of the general notion of temporality in language. But in addition to location in time, temporality has another side, namely the internal structure of a situation; this is the area covered by the grammatical category of aspect and the lexical category of *aktionsart*. Traditional grammatical terminology is often confusing here in that the term 'tense' is used in a broader sense, to cover distinctions that are properly *aspectual*, as when Latin is said to have a perfect 'tense' (e.g., *amavi* 'I loved, I have loved') and an imperfect 'tense' (e.g., *amabam* 'I loved, I was loving, I used to love'), although both in fact are *past tense* (locating the situation of my loving before the present moment) and are distinguished aspectually (perfective versus imperfective aspect, respectively). This terminological equivocation will be strictly avoided here.

Tense, a grammatical category, is only one of several ways in which language can convey information concerning location in time. Not surprisingly, the lexical resources in any language for expressing location in time are much richer than the grammatical devices, so that in English the sentence-initial adverbials of the sentences in (1) provide much more detailed information concerning the location in time of the situation of Mary's going to the beach than does the past tense of the verb:

*This morning, Mary went to the beach.* (1a)

*Yesterday afternoon, Mary went to the beach.* (1b)

*A month ago last Tuesday, Mary went to the beach.* (1c)

The meanings of tenses are typically much more abstract than the meanings of lexical items. Sometimes, lexical expressions and tense will combine to give a richer interpretation of location in time than either does in isolation, as in the following example, where the lexical item tells us that Mary's going to the beach took place on a Tuesday, but not whether this was a Tuesday in the past or in the future, information which is supplied by the tense:

*On Tuesday, Mary went to the beach.* (2a)

*On Tuesday, Mary will go to the beach.* (2b)

Often the temporal location of a situation can be deduced from other facets of the meaning of a sentence or longer text. In the examples below, for instance, the most plausible interpretation is that in (3a) John's jumping up and down occurred after his going out through the door, while in (3b) he first jumped up and down and then went out through the door; this follows from a general principle of discourse organization in narratives whereby events are normally narrated in the order in which they occur:

*John went out through the door and jumped up and down.* (3a)

## Tense

*John jumped up and down and went out through the door.* (3b)

In German, the so-called 'present tense' sometimes receives an interpretation of present time reference, sometimes of future time reference, on which basis this form is more properly characterized as a non past tense. Which of these interpretations is assigned depends in part on co-occurring time adverbials, as in (4a). In the absence of such indication, there is a strong tendency for sentences expressing states to receive present time reference (given that it makes perfect sense to have a state holding at the present moment), as in (4b), while sentences expressing events tend to receive future time reference (since it does not usually make sense to locate an event precisely at the present moment), as in (4c):

*Herr Maier ist morgen in Berlin.* (4a)  
'Mr Maier will be (literally is) tomorrow in Berlin.'

*Herr Maier ist in Berlin.* (4b)  
'Mr Maier is in Berlin.'

*Herr Maier bekommt ein Fahrrad.* (4c)  
'Mr Maier will receive (literally receives) a bicycle.'

In German, then, the distinction between present and future time reference can often be deduced from the distinction between state and event expressions (though there is also an explicitly future periphrastic form, as in (4d), used especially where there is no basis for deducing future time reference):

*Herr Maier wird in Berlin sein.* (4d)  
'Mr Maier will be in Berlin.'

The full interpretation of the chronological structure of a text requires input from a number of different sources, of which tense is only one. Indeed, given the rather abstract meanings that tenses tend to have (such as 'located before the present moment'), tense often seems to play a rather minor role in establishing the overall chronological structure of a text. Nonetheless, tense is an important part of any overall account of the linguistic expression of location in time because those semantic oppositions in this area that are categorized grammatically as tense, precisely because they have been selected for grammatical categorization, are likely also to be those that are conceptually particularly salient.

The grammatical categories that are subsumed under tense are those whose basic function is to locate situations in time. As with grammatical (and often even lexical) categories in general, some tenses as defined in this way also have secondary uses. For instance, the present tense can often be used as a stylistic device in narratives where it clearly refers to situations located in the past, as in:

*I was sitting down eating my dinner when this fellow comes up to me and says.* (5)

If someone telephones me and says (6), then I am unlikely to interpret this as a description of this person's desires at some point in the past, but rather to assume that the reference is to the present moment and that the past tense is being used rather than the present here to soften the request:

*I just wanted to ask if you could drive me into town today.* (6)

In some cases, there may be well-placed doubt as to whether a particular grammatical form is basically a tense or basically something else with location in time as a frequent inference; thus, linguists are not agreed whether English sentence (7a) illustrates, in the strict sense, a future tense, or whether the future time reference interpretation is simply a special case of inferential modality, cf. (7b) with present time reference:

*Mary will be at home tomorrow.* (7a)

*Mary will be at home now.* (7b)

(Indeed, some linguists have gone so far as to claim that the meanings, in the strict sense, of grammatical categories traditionally called tense have nothing to do with location in time, although no one has come up with a broadly convincing account of [so-called] tenses from this viewpoint.) The forms to be discussed below are thus presented as tenses in the sense that location in time is their basic meaning, although the possibility of other, secondary uses is not excluded.

## 2. Absolute and Relative Tense

Since time does not have any inherent topological features that can be used as reference points in locating situations in time, in order to locate a situation in time it is necessary to select some reference point, relative to which the situation can then be located. Cross-linguistically, the most widespread reference point is the present moment. Tenses which use the present moment as their reference point are referred to as 'absolute' tenses. In principle, three absolute tenses can readily be distinguished: if the situation located in time overlaps with the present moment—present tense; if the situation located in time precedes the present moment—past tense; if the situation in time follows the present moment—future tense. These may be represented diagrammatically as follows, using the abbreviation E (mnemonic for '[time of] event') for the situation and S (mnemonic for '[time of] speech') for the present moment:

Present      E overlaps S (8a)

Past          E precedes S (8b)

Future       E follows S (8c)

Corresponding English sentences would be the following, in the same order:



- |                                 |      |   |       |
|---------------------------------|------|---|-------|
| <i>John is eating an apple.</i> | (9a) | <i>Those singing were told to be quiet.</i>                 | (11a) |
| <i>John ate an apple.</i>       | (9b) | <i>Those having sung were asked to leave the stage.</i>     | (11b) |
| <i>John will eat an apple.</i>  | (9c) | <i>Those about to sing were asked to go onto the stage.</i> | (11c) |

Instead of making a three-way distinction as in (8), some languages make only a two-way distinction, for instance, having a distinction between past tense (E precedes S) and non past tense (all other possibilities); this is clearly the case in, for instance, Finnish. Whether there are languages that have the two-way opposition future versus non future is more controversial, and no languages have been cited with a two-way opposition present versus non present (in which case the non present would have to be discontinuous in its range of application).

The definition of present tense above, while readily covering such sentences as (9a), might seem less appropriate to sentence (9d) in its most usual interpretation, that is, indicating that John has the habit of eating apples:

- John eats apples.* (9d)

Sentence (9d) can be true even if it is not the case that John is eating an apple at the present moment. However, (9d) does not in fact refer to an action of actually eating apples, but rather to a property of John, namely that he habitually eats apples, and this property is claimed to be true of John even at those moments when he is not actually eating an apple. Thus the property that is attributed to John is true of the present moment, and the use of the present tense here falls under the definition given in (8a). The same applies in the case of sentences like (9e), with universal time reference:

- Water flows downhill.* (9e)

Here, reference is to a property of water that is true at all times, and therefore necessarily at the present time, whence the present tense is an appropriate tense to use in expressing this idea.

By 'relative' tense is meant a tense that locates the situation referred to relative to a contextually given reference point, rather than specifically to the present moment. In English, tense oppositions in participial forms typically have relative time reference, as in the relative present tense *singing*, the relative past tense *having sung*, and perhaps a relative future tense in forms like *about to sing*. The meaning of these three forms can be represented as follows, where the abbreviation R (mnemonic for '[time of] reference') stands for the contextually given reference point:

- |                  |              |       |
|------------------|--------------|-------|
| Relative present | E overlaps R | (10a) |
| Relative past    | E precedes R | (10b) |
| Relative future  | E follows R  | (10c) |

English examples illustrating these possibilities are given below, in the same order:

The finite verbs in these examples have *absolute* time reference, in each case to the past. In order to interpret the time reference encoded by the participial forms, it is necessary to find a contextually given reference point. In these examples, the most plausible such reference point is that given by the tense of the finite verb. Thus the reference point in (11a) is taken to be the time at which they were told to be quiet, and the participle thus locates the act of singing as overlapping the time at which they were told to be quiet. In (11b), the reference point is taken to be the time at which they were asked to leave the stage, and the participle locates the act of singing as preceding this reference point. In (11c), the reference point is taken to be the time at which they were asked to go onto the stage, and the participle locates the act of singing subsequent to this reference point. Changing the tense of the finite verbs in examples (11) leaves constant the relation between the temporal reference of the participle and that of the finite verb, although since the relation between the temporal reference of the finite verb and the present moment shifts with such changes in tense, the absolute time reference of the participle will change, as can be seen in the following in comparison with the correspondingly lettered examples in (11):

- Those singing will be told to be quiet.* (12a)

- Those having sung will be asked to leave the stage.* (12b)

- Those about to sing will be asked to go onto the stage.* (12c)

In (12b), for instance, the act of singing is still expressed as preceding the act of being asked to leave the stage, but this second act is now located in the future, making it quite plausible that the singing will also take place in the future.

Although the contextually given reference point will often be taken to be the finite verb of the clause, as in the above examples, this is not the only possibility. Another possible interpretation for the sentences in (11) and (12) would be to relate the act of singing temporally to the present moment, since the present moment is necessarily given in every context. Thus, (11a) could be interpreted as indicating that those who are now singing were told to be quiet at some time in the past, while (12a) could very naturally be interpreted to mean that those who are singing now will be told to be quiet. Relative tenses in themselves give no indication of what the contextually given reference point is—this the hearer must work out from the context and from general considerations of plausibility—rather all that they indicate is that there must be a contextually given reference point. (Note that relative tenses where the contextually given reference point happens to be the present moment are

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still distinct from absolute tenses: with absolute tenses, the present moment is the only possible reference point, whereas with relative tenses it is only one of several possibilities.)

In English and, more generally, European languages it is only non finite verb forms that systematically have relative time reference. However, the possibility remains that some languages have relative time reference as the characterization of even finite verb forms. This seems, for instance, to be the case in classical Arabic, where the form traditionally called the 'imperfect' may be analyzed as a relative non past tense; in the absence of a contextual indication to the contrary, the present moment will be taken as the reference point, giving an interpretation with non past (i.e., present or future) time reference relative to the present moment; however, the presence of some other contextually given reference point, such as the time adverbial in (13a), will shift the interpretation to non past relative to that contextually given reference point. Similarly, the so-called 'perfect' may be analyzed as a relative past tense; in the absence of any other contextually given reference point, it will be interpreted as referring to a time before the present moment, but in an example like (13b), where the main clause (plus the broader context, not reproduced here) indicates a reference point in the future, it is interpreted as referring to a time before that future reference point, rather than before the present moment:

*Wa ttaba'ū mā tatlū sh-shayātī nu* (13a)  
'alā mulki sulaymāna.

'And they-followed (PERFECT) what the devils recited (IMPERFECT) [literally recited the devils] in [the] reign of-Solomon.'

*'ajī'u-ka 'idhā ḥumarra j-busru.* (13b)  
'I-will-come (IMPERFECT) to-you when the date ripens (PERFECT) [literally ripens the date].'

Many languages, including English, also have tenses that combine elements of absolute and relative time reference, in the following general way: a situation is located in time relative to some contextually given reference point, while this reference point is in turn located in time relative to the present moment, all of this being done by means of a single tense. Such tenses may be called 'absolute-relative' tenses, although this is not a traditional term; traditionally, and potentially confusingly, the term 'relative tense' is used to cover all tenses that involve an element of relative time reference, whether or not they also involve an element of absolute time reference. Some such tenses have traditional names in English grammar (e.g., pluperfect, future perfect), while others do not (e.g., what is here called future in the past). In the following representations, both traditional names (where they exist) and more descriptive labels are given:

Pluperfect/Past in the past	E precedes R precedes S	(14a)
Future perfect/Past in the future	E precedes R follows S	(14b)
Future in the past	E follows R precedes S	(14c)
Future in the future	E follows R follows S	(14d)

(Note that (14b), for instance, is to be interpreted as 'E precedes R, which in turn follows S.'). Corresponding English examples are given below, with the same ordering, although it should be noted that it is very questionable whether the 'future in the future' of (15d) is really to be considered a tense in English:

*Mary had left by six o'clock.* (15a)

*Mary will have left by six o'clock.* (15b)

*Mary left at six o'clock; she would return an hour later.* (15c)

*At six o'clock, Mary will be about to leave.* (15d)

In (15a) the context provides a reference point 'six o'clock'; the pluperfect verb form indicates that this reference point precedes the present moment (i.e., reference is to some six o'clock in the past) and that the event of Mary's leaving is located before this reference point. In (15b), the reference point is later than the present moment (i.e., some six o'clock in the future) and the event of Mary's leaving, expressed in the future perfect, is located prior to this. In (15c), the reference point is given by the time of Mary's leaving at six o'clock, in the past because of the past tense of this verb in the first clause; the future in the past thus locates her return after this reference point in the past. In (15d), the future in the future instructs us to find a reference point in the future (here, six o'clock, referring to some six o'clock in the future) and to locate Mary's departure subsequent to this future reference point. It is even possible to have more complex representations by using multiple reference points, for instance, by locating a situation relative to a reference point, which is located relative to another reference point, which is in turn located relative to the present moment, as in the following example:

*Mary left home at eight o'clock:* (16)  
*she would return an hour later, by which time*  
*her son would have left for school.*

The verb *left* in the past tense locates Mary's departure prior to the present moment, and establishes a reference point which is used by the future in the past of the following clause, which locates Mary's return subsequent to her departure; the time of Mary's return in turn creates a reference point which is used by the 'past in the future in the past' of the verb *would have left*, which locates her son's departure prior to the second reference point. Diagrammatically, this can be represented as follows:

E precedes R follows R precedes S (17)

It is important to note that in absolute-relative tenses, the situation is not located in time directly in relation to the present moment. In some cases, the temporal relation between the situation and the present moment can be calculated: in the case of the pluperfect, for instance, as in (14a), it is clear that if the situation is located before the reference point and the reference point is located before the present moment, then the situation must be located before the present moment. In some cases, however, it is not possible to derive from the tense an unequivocal temporal relation between the situation and the present moment. Take, for instance, the future perfect in sentence (15b), and imagine the following situation: some hours ago, Mary promised to leave by six o'clock. In the meantime, I have not seen Mary, and have no idea whether she has already left or not. I know that Mary always keeps her promises. Under these circumstances, I can reasonably and truthfully utter (15b) whether it should turn out that Mary has already left (E in fact before S), that she is leaving at the moment of my speaking (E in fact overlapping S), or that she leaves between my speaking and six o'clock (E in fact follows S).

(It should be noted that some writers restrict the term 'tense' to what is here called 'absolute' tense and either refer to what is here called 'relative' (and absolute-relative) tense by some other term (e.g., *taxis*) or subsume it under *aspect*.)

The formulas given above can be combined into a single formula as follows, in which 'rel' covers the various relations 'overlaps,' 'precedes,' and 'follows'

E (rel R)<sup>n</sup> (rel S) (18)

This formula covers the following subcases:

E rel S Absolute tense (19a)

E rel R Relative tense (19b)

E rel R rel S Absolute-relative tense (19c)

E Tenseless (19d)

(The superscript in (18) allows also for absolute-relative tenses with multiple reference points, as in (17); (19d) allows for expressions that refer to a situation without locating it in time.) The succinct formula in (18) covers the basic tense possibilities found cross-linguistically and can thus be regarded as a very tightly constrained theory of tense.

### 3. Degrees of Remoteness

There is one further parameter that needs to be added to the Sect. 2 discussion to provide a comprehensive theory of tense that covers all possibilities that are widespread cross-linguistically. In many languages, there is grammaticalization not only of whether one time precedes or follows another, but also of the amount of time that separates the two times, that is,

of the degree of remoteness between them. For instance, in Haya, a Bantu language of Tanzania, there are three past tenses, symbolized here as P<sub>1</sub>, P<sub>2</sub>, and P<sub>3</sub>. Haya P<sub>1</sub> is strictly constrained to referring only to situations that held earlier on today; P<sub>2</sub> refers to situations that held yesterday; while P<sub>3</sub> refers to situations that held before yesterday. The strictness of these semantic distinctions can be seen in the constraints on co-occurrence with the temporal adverbs *mbwèènu* 'today,' *nyéigolo* 'yesterday,' *ijo* 'the day before yesterday':

*Twákôma mbwèènu/\*nyéigolo/\*ijo.* (20a)  
'We-tied-up (P<sub>1</sub>) today/\*yesterday/\*the day before yesterday.'

*Tukomile \*mbwèènu/nyéigolo/\*ijo.* (20b)  
'We-tied-up (P<sub>2</sub>) \*today/yesterday/\*the day before yesterday.'

*Tùkakôma \*mbwèènu/\*nyéigolo/ijo.* (20c)  
'We-tied-up (P<sub>3</sub>) \*today/\*yesterday/the day before yesterday.'

While such strict boundaries on the temporal reference of tenses distinguished by degrees of remoteness are certainly possible, as illustrated by the Haya examples in (20), in other cases the boundary is more fluid, depending on whether or not the situation is considered subjectively to be closer or further away in time. For future time reference, Haya has two tenses, F<sub>1</sub> and F<sub>2</sub>. Roughly speaking, F<sub>1</sub> is used for situations holding later on today or tomorrow, while F<sub>2</sub> is used for situations holding after tomorrow. For F<sub>2</sub>, the dividing line between tomorrow and the day after tomorrow is strict, that is, F<sub>2</sub> cannot co-occur with the adverbs *mbwèènu* 'today' or *nyenkyá* 'tomorrow'; however, the boundary of F<sub>1</sub> is more fluid, so that F<sub>1</sub> can be used for situations that are objectively located after tomorrow but which are felt, subjectively, to be imminent:

*Nyenkyá tuligýá/\*tulaagyá Katoke.* (21a)  
'Tomorrow we-will-go (F<sub>1</sub>)/(F<sub>2</sub>) [to] Katoke.'

*Mwézy' ógulaijá tuligýá/tulaagyá Katoke.* (21b)  
'Next month we-will-go (F<sub>1</sub>)/(F<sub>2</sub>) [to] Katoke.'

Grammaticalized expression of degrees of remoteness is rather rare in European languages, and no doubt in part for this reason the relevance of degrees of remoteness for the general theory of tense has often been underestimated. Tenses characterized by different degrees of remoteness are, however, widespread among languages of Sub-Saharan Africa, Australia, New Guinea, and many parts of the Americas; a two-way distinction between remote and near past or future is the most widespread, though as many as five-way distinctions have been reliably reported for some languages, and Kiksht, a variety of Chinookan spoken in the northwestern USA, seems to have a six- or seven-way opposition for past time reference. Even some European languages turn out, on closer inspection, to have degrees of remoteness as at least one

criterion governing tense choice. In some Romance languages (e.g., Castilian Spanish and some varieties of Occitan), the so-called 'preterite' is used for situations that held before today while the perfect is used for situations that held earlier on today, as in the contrast between these Spanish sentences:

*La vi ayer a las seis de la mañana.* (22a)

'I saw (PRETERITE) her yesterday at six in the morning.'

*La he visto hoy a las seis de la mañana.* (22b)

'I saw (PERFECT) her today at six in the morning.'

#### 4. Other Considerations

The factors discussed in Sect. 3 and 4 provide a theory of tense that covers those facets of the grammaticalization of expressions of location in time across the bulk of cases in the world's languages. However, there are some other facets of grammaticalization of location in time that have a more restricted distribution but nonetheless merit inclusion in a comprehension discussion.

Some languages have tenses that permit simultaneous reference to more than one time. In English, the lexical item *still* indicates that a situation holds not only at the time specified but also at a period of time preceding the time specified, that is, 'we are still seated' indicates not only that we are seated now but also that we were seated during a period of time leading up to the present. (More accurately, the sentence presupposes that we were seated during this earlier time period and asserts that we are seated now.) In Luganda, the dominant Bantu language of Uganda, there is a grammatical form, which one might call the 'still'-tense, to express this meaning:

*Mukyatudde.* (23a)

We-are-seated ('STILL'-TENSE).

If (23a) is negated, as in (23b), then the presupposition that we were seated during a time period leading up to the present remains unchanged, but the assertion that we are now seated is denied, that is, 'we are no longer seated':

*Te-mukyatudde.* (23b)

NEGATIVE we-are-seated ('STILL'-TENSE).

It is conceivable that the perfect in languages like English might be analyzable in somewhat similar fashion, with double time reference, so that a sentence like (24) would refer both to a situation in the past (namely, John's breaking his leg) and to its present consequences, although the analysis of the perfect is in general highly controversial:

*John has broken his leg.* (24)

The discussion of temporal relations in Sect. 2, where the only possible relations are between the situation and the present moment, between the

situation and a contextually given reference point, between two contextually given reference points, and between a contextually given reference point and the present moment, covers all those relations that are required for most tenses in most languages, but there are some phenomena found occasionally across the world's languages that require a weakening of this constraint. In some languages, there are grammatical forms that relate a situation temporally to some cyclically recurring time period; in all attested examples the cycle is the twenty-four-hour daily cycle, thus giving rise to grammatical morphemes with such meanings as 'by day,' 'at night,' 'in the morning.' For instance, Yandruwandha, an Aboriginal language of South Australia, has suffixes *-nhina* 'by day,' *-yukarra* 'by night,' and *-thalka* 'in the morning.' This phenomenon perhaps stands at the border line between grammaticalization and lexicalization: in none of the languages where the phenomenon is attested is the use of these markers obligatory.

Tenses sometimes interact with syntactic rules in a way that gives rise to tense uses that are apparently at variance with their semantic representation. Such uses do not constitute counterexamples to the semantic representation, rather they indicate that, under these circumstances, account must be taken not only of the semantic representation but also of the specific properties of the syntactic construction in question. In English indirect speech, for instance, after a non past tense in the main clause the tense of the original speaker is retained in the subordinate clause. This can give rise to circumstances where a tense as used in indirect speech seems to have an exceptional time reference. Consider the following situation: today is July 26; I predict that a week from now, Mary will utter the words 'I arrived on July 27.' I can express this as follows:

*Mary will say that she arrived on July 27.* (25)

The past tense *arrived* refers to a situation located in the future (since July 27 follows July 26), in apparent contradiction to the meaning of the past tense as location in time before the present moment. However, once the rule about tense in indirect speech is borne in mind, there is nothing exceptional here: indeed, this use of the past tense is predicted by the interaction of the meaning of the past tense and the indirect speech rule. The use of a particular tense form involves a number of factors, of which its meaning is only one; this is one of the reasons why the study of tense is a complex but exciting and rewarding area of study.

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## Topic and Comment

J. van Kuppevelt

Substantial topic-comment research started in the second half of the nineteenth century. Since German linguists, in particular Von der Gabelentz (1868), introduced this notional pair, it has become a fundamental part of linguistic theory and analysis. Besides linguists, however, philosophers, (formal) semanticists, cognitive scientists and (experimental) psychologists have also studied this subject, mainly from the perspective of the discipline concerned. The notions 'topic' and 'comment' are generally understood in the following way. The notions presuppose that a discourse unit *U*, a sentence or (part of) a discourse, has the property of being, in some sense, directed at a restricted set of entities and not at all entities that have come up in *U*. This restricted set of entities is what *U* 'is about' and constitutes the topic of *U*. The complementary notion 'comment' refers to what is newly asserted of the topic. The notion 'topic' is thus related both to sentences (utterances) and larger discourse units, resulting sometimes in an explicit formulation of a distinction between sentence topics and discourse topics. On the whole, however, research has restricted itself to an analysis of sentence topics.

### 1. Terminology

Topic-comment research is, unfortunately, characterized by the absence of uniformity in terminology. First, different terms are used in the literature to refer to the notion of 'topic.' There is the term 'topic' (e.g., Chomsky 1965; Hockett 1958; Hornby 1971; Lyons 1968; Reinhart 1981; Schank 1977; Sgall, et al. 1973 and Strawson 1971, to mention just a few of the earlier approaches), but one also finds the term 'theme' (e.g., Daneš 1974; Firbas 1966; Halliday 1967; Kuno 1980 and many others after them) and, now slightly out of use, 'psychological subject' (e.g., Von der Gabelentz 1868; Hornby 1972; Paul 1880).

A second point is a difference often found in what may be called the 'categoriality' of the terms for 'topic' and 'comment'. Often, the second term is meant to refer to something which is categorially different from what is denoted by the first. Thus one finds a bicategorical pair *topic-focus* in, for example, Dik (1978) and Sgall (1979). The first term of this pair is usually not operationally defined in terms of 'aboutness,' the second in terms of 'informational status' such as *new* or *most prominent information* in a sentence.

The last point concerns structural, notional and/or ontological differences in term designation. Not all authors use the same term to refer to topics of structurally different levels. Some reserve different terms from the set of terms available to refer to different kinds of topic, for example the term *topic* to denote a

sentence topic and the term *theme* to denote the topic of a paragraph (Givón 1983: 7–8).

Some authors use terms like 'topic' and 'theme' to refer to notions that differ categorially from the 'topic' or 'aboutness' notion. Chafe, for example, reserves the term 'topic' for 'the frame within which the sentence holds' (1976: 51). The topic 'sets a spatial, temporal or individual framework within which the main predication holds' (1976: 50). Chafe applies the term topic primarily to specific structural phenomena in so-called topic-prominent languages. But also temporal adverbials, which occur in English in sentence-initial position, are considered to be equivalent manifestations to which this term applies. Thus, in the English sentence 'Tuesday I went to the dentist', the adverb *Tuesday* is 'topic' (1976: 51). The grammatical subject *I*, on the other hand, is identified with what the sentence is about: 'the subject is what we are talking about' (1976: 43). Similar uses of either the term 'topic' or the term 'theme' are found in Dik (1978) and Li and Thompson (1981).

Definitions of the notion 'sentence topic' show that terms like 'topic' and 'theme' are applied to entities which differ essentially in ontological status. The terms are applied not only to entities on the level of semantic extension, i.e. the referents of linguistic expressions, but also to the linguistic elements themselves. In the first case, the topic of a sentence is formally defined as an entity in the world (or an *n*-tuple of such entities) that the sentence is about (e.g., Lyons 1968; Wason and Johnson-Laird 1972). Sentence 'aboutness' is thus assumed to be a two-place relation between a sentence *S* and an entity *e* that sentence *S* is about. Here terms like 'topic' and 'theme' are applied to *e*.

The application of these terms to linguistic entities may differ according to the 'aboutness' relation that is assumed. First, there are authors who define a sentence topic as a sentence part that refers to an entity in the world the sentence is about (e.g., Dahl 1969; Hornby 1971). Sentence 'aboutness' is here assumed to be a two-place relation between a sentence *S* and the extension  $|s|$  of a structural element *s* in *S*. Terms like 'topic' and 'theme' apply to *s*. Secondly there are authors who, surprisingly, define a sentence topic as a sentence part the sentence is about (Davison 1984; Ryle 1933). In this case, sentence 'aboutness' is characterized as a two-place relation not between a sentence *S* and the extension  $|s|$  of a structural element *s* in *S* but between a sentence *S* and the structure element *s* itself. In both cases the term used does not apply to entities in the world but to linguistic expressions which designate such entities.

## 2. The Kind of Phenomena Explained

The notions 'sentence topic' and 'discourse topic' are considered to function as explanatory principles for particular linguistic phenomena. The former often functions as an explanatory principle for specific, often assumed to be non-truthconditional differences in sentence (utterance) meaning. Many authors assume that these meaning differences are caused by differences in topic-comment modulation of the sentences in question. The following three sentences illustrate the differences in sentence meaning these authors wish to account for. The differences are marked by the position of the primary sentence accent, which is rendered notationally by the use of capitals.

- (a) (Who hit Bill?)  
JOHN hit Bill. (1)
- (b) (What did John do to Bill?)  
John HIT Bill.
- (c) (Who did John hit?)  
John hit BILL.

The explanation proposed is, in general terms, that the constituents which belong to the topic part of the (question-answering) sentence remain unaccented. Therefore, the accented constituents can have no topic function. The authors who give such an explication (e.g., Hornby 1971) identify the notions 'topic' and 'comment' operationally with the notions 'given/old information' and 'new information,' respectively. Topic-constituents are considered to be the representation of given, contextually bound information that is already stored in discourse. Because of their 'given' status they are, other than constituents which represent new information, no candidates for accent assignment.

Though an explication of meaning differences as in (1) is mostly given in terms of the 'topic' or 'aboutness' notion, no general consensus exists about the explanation of these phenomena. Some authors refrain from an explanation in terms of the topic-comment distinction. They exploit either the distinction between 'given/old' and 'new information' in the sentence (Halliday 1967; Kuno 1972) or a formally and operationally similar distinction between 'presupposition' and 'focus' (Chomsky 1971; Jackendoff 1972). When, besides a given-new (presupposition-focus) distinction, also a topic notion is assumed, this is not, as in the previous case, operationally identified with the notion 'given' or 'presupposed information.' Halliday (1967), for example, explains meaning differences like those between the sentences in (1) in terms of the given-new distinction, although according to his definition of topic ('theme') all these sentences are about John. Thus Halliday observes: 'Basically, the theme is what comes first in the clause ... The theme is what is being talked about,

the point of departure for the clause as a message' (Halliday 1967: 212). A similar view also implying a categorical distinction between what Halliday calls theme (topic) and given information is present in various, mainly recent so-called 'structured meaning' approaches that provide a syntactically oriented (formal) semantic representation of the focus structures (e.g., Jackendoff 1972; Jacobs 1983; Krifka 1991; Von Stechow 1981, 1989). A similar view is also present in some of the pragmatic accounts (e.g., Vallduví 1990, 1993). Contrary to these views, Steedman (1991) proposes an isomorphism between syntactic, informational and intonational structure based on Combinatory Categorical Grammar in which he adopts the same idea of two independent notional pairs but does not define the topic ('theme') of a sentence in terms of word order, i.e. as the sentence-initial element.

From the beginning, the notion 'discourse topic' plays an important role in many, in particular, computational and (psycho)linguistic theories and views about discourse coherence, either explicitly or implicitly, (e.g., Grimes 1975; Hobbs 1982; Johnson-Laird 1983; Reichman 1978; Schank 1977). Especially in discourse (text) grammars (e.g., Van Dijk 1977) the notion often functions as the explanatory principle for the structural coherence underlying a well-formed discourse. In general it is assumed that a coherent discourse is composed of a set of hierarchically organized discourse segments under one discourse topic. The overall discourse topic associated with the discourse as a whole and comprising all smaller discourse segments constitutes the superordinate discourse topic. Under this common superordinate discourse topic, the discourse topics of the subsegments are ordered paratactically or hypotactically, depending on whether there are inclusion relations between the subsegments. Although it is often claimed that structural coherence phenomena in discourse are 'explained' in terms of the notion 'topic,' these explanations are generally intuitive and fail to achieve formal precision, due, mainly, to the absence of an empirically and operationally adequate definition of discourse topic and an unclarity with respect to the relation between discourse and sentence topics or between discourse topics themselves.

## 3. Topic identification

In the topic-comment literature several tests and also several operational characterizations are presented to identify sentence topics. The tests and the characterizations will be dealt with below in separate sections. In the most satisfactory cases the proposed tests are meant to take as input a topic-bearing sentence and to give as output a specification of the topic of that sentence. In many cases, however, the test is only meant to determine whether some sentence element has topic function, indicating that this element is part

of the topic constituent of the sentence. A characteristic of all tests, as opposed to characterizations, is the fact that the actual discourse context in which the topic-bearing sentence occurs is not a part of the test itself. The operational characterizations proposed in the literature can be classified into context-dependent and context-independent characterizations, as will be clarified in Sect. 3.2.

### 3.1 Tests for Topic-hood

Well-known tests for topic identification are the fronting test (e.g., Kuno 1972; Lakoff 1971), the 'about'-context test (Reinhart 1981), the 'about'-question test (Gundel 1977) and a test which is commonly known as the question test (e.g., Sgall, et al. 1973, 1986). The first three tests are fundamentally restricted to the identification of noun phrase (NP) topics.

The fronting test is based on the assumption, not commonly accepted, that NPs which are fronted by, for example, a left-dislocation operation structurally mark topic-hood. This test implies that if a structurally unmarked sentence containing an NP<sub>1</sub> ( $S_{<NP_1>}$ ) can be acceptably paraphrased according to the scheme *As for / Concerning / About NP<sub>1</sub>, S<sub><NP<sub>1</sub>></sub>*, NP<sub>1</sub> represents the topic of the original sentence. In Reinhart (1981: 64-65) it is pointed out that the application of this test is restricted to sentences which introduce a new topic or lack a specific or generic indefinite topic-NP.

According to the 'about'-context test, a structurally unmarked sentence  $S_{<NP_1>}$  is paraphrased by extending the sentence in agreement with a scheme like *He said about/of NP<sub>1</sub> that S<sub><NP<sub>1</sub>></sub>*. Properly speaking, the extended sentence is not an adequate paraphrase of the original sentence. The added part forces the original sentence to be about what is represented by NP<sub>1</sub> or, perhaps more precisely, what the person in question says about it. Without this addition, the original sentence may be about a different topic, depending on the preceding context.

In the case of the 'about'-question test the topic-bearing sentence  $S_{<NP_1>}$  is not paraphrased but is placed in a context of a specific question *What about NP<sub>1</sub>?* The test is based on the assumption that if sentence  $S_{<NP_1>}$  is about NP<sub>1</sub>,  $S_{<NP_1>}$  is an acceptable answer to the 'about'-question. According to this test accented and clefted NPs have no topic function since the sentences which contain them constitute no acceptable answer to the 'about'-question. Like all other tests, this test does not make manifest how sentence topics affect discourse coherence. The coherence in discourse does not become apparent either when every topic-bearing sentence is preceded by an 'about'-question, or when we replace every topic-bearing sentence by one of the proposed paraphrases.

Of all identification tests that have been proposed the question test is probably the best known. This test

has many variants, the most comprehensive of which is presented in Sgall, et al. (1986). According to this test the division of a topic-bearing sentence in a topic and a comment (focus) part is determined by the set of *wh*-questions (see QUESTIONS) to which the sentence is an appropriate direct answer, both informationally and intonationally. Constituents of the sentence which appear in every question belong to the topic part and constituents which appear in no question belong to the comment part. The test fails to specify the status of the constituents that appear in only *some* of the questions.

When the question test is applied to, for example, the sentence *John hit BILL*, it determines that the constituents *John* and *Bill* belong to the topic and comment part, respectively. Since the sentence constitutes an appropriate direct answer to both *What did John do?* and *Who did John hit?* the test leaves the status of the verb undecided. Although this sentence is also an appropriate answer to questions like *What happened?* and *What's new?*, these questions are excluded from the set. It is assumed that sentences in discourse which answer such general questions are topicless (1986: 212). A characteristic of this test is that different questions can determine the same topic-comment modulation, despite the fact that they may arise in different appropriate contexts. Recently, in addition to this test, an algorithm for topic-focus identification has been developed (Hajičová, et al. 1995).

### 3.2 Classification of Operational Characterizations

Context-independent operational characterizations of sentence topics can be divided into two types: either in terms of just a *specific syntactic category* (Chafe 1976) or in terms of *word order* (e.g., Chomsky 1965; Halliday 1967; see also *Word Order and Linearization*), with or without the requirement of a specific category. According to the former, the topic of a sentence is identified with the grammatical subject of the sentence. According to the latter, the topic (theme) of a sentence is, in principle, identified with the element in sentence-initial position. In Halliday (1967), which comes into the word order category, this characterization is meant to apply without any restriction as to the syntactic category of the sentence-initial element. Chomsky (1965) on the other hand (also of the word order class) explicitly states that sentence topics must have NP-status. The author characterizes a sentence topic as the leftmost NP immediately dominated by S in the surface structure.

Characterizations in terms of word order prevail. Three specific consequences of this type can be mentioned. The first consequence (which is not generally accepted) is that a topic is defined for every sentence, and that, moreover, this is always linguistically expressed. The second consequence is that the same topic is defined for succeeding utterances which have the same constituent in first position. Creider (1979)

demonstrates that this is not always correct. He shows that especially a left-dislocated constituent cannot also serve as the topic of a succeeding utterance. The third consequence has to do with topic-comment phenomena that are related to question-answer pairs. Characterizations in terms of word order have as a consequence that the results of topic identification are inconsistent with the widely accepted assumption that one single topic is defined for question-answer pairs. This assumption implies that in question-answer pairs the topic is constituted by the question, so that, in the answer, the topic constituent always represents given information. According to word-order type characterizations, the topic constituent in the answer can also have new status. This is typically the case when the sentence element in sentence initial position receives the primary accent, for example, the constituent *Harry* in 'Who has been arrested?—Harry has been arrested.'

As has been said, some characterizations of sentence topics are context-dependent. These can be divided into three types: characterizations in terms of *informational status* (Bolinger 1977; Hornby 1970; Sgall, et al. 1973 and many others), sometimes involving the extra requirement of a status of contextually determined preference as is characteristic for the computational approach of Centering Theory (e.g., Grosz, Joshi and Weinstein 1986, 1995; Joshi and Weinstein 1981, and Walker, Joshi and Prince 1997); characterizations in terms of *alternatives* as is suggested by the formal semantic approach known as Alternative Semantics (in particular Rooth 1985, 1992); and characterizations in terms of *questions* (e.g., Bartsch 1976; Keenan and Schieffelin 1976; Klein and Von Steutterheim 1987; Van Kuppevelt 1991; Stout 1896; Strawson 1971; Vennemann 1975).

Regarding the first type, the topic of a sentence is identified with the given/old or contextually bound information in the sentence. The identification of sentence topics is thus reduced to the identification of given information. A direct consequence of this approach is that sentences that only represent new information are topic-less. Therefore, the criterion for sentence topics is that a given-new modulation is defined for it. Apart from the problem of how a sentence's given information can be identified, a more fundamental problem is whether givenness is a necessary and/or sufficient condition for topic-hood. In, for example, Reinhart (1981) it is argued that topics can also have new status and that given information need not be part of the topic (on the given-new distinction see, for example, Chafe 1976; Clark and Haviland 1977; Halliday 1967; Prince 1981).

In Centering Theory the notion of sentence topic is expressed by what is called the Backward-looking Center  $C_b$  of an utterance  $U_i$  ( $C_b(U_i)$ ).  $C_b(U_i)$  is a discourse entity evoked by  $U_i$  that is both contextually given and contextually preferred, implying that

this entity was already introduced in the preceding utterance  $U_{i-1}$  and predicted to be the one  $U_i$  would be 'about.' As is the case with every utterance  $U_i$ , the set of discourse entities associated with  $U_{i-1}$ , called the set of Forward-looking Centers of that utterance ( $C_f(U_{i-1})$ ), is a (partially) ordered set the ordering of which is language-specific, determined by various formal (syntactic, prosodic, etc.) characteristics of  $U_{i-1}$ . The highest-ranked element of this set is called the Preferred Center  $C_p$  of  $U_{i-1}$  ( $C_p(U_{i-1})$ ), which expresses a preference with respect to the topic of the next utterance  $U_i$ . As mentioned, the full set of factors responsible for such an ordering is still to be determined. Backward-looking center and Forward-looking center correspond to Sidner's (1979) notion of current discourse focus and potential focus, respectively.

Although not explicitly part of the theory, the Alternative Semantics approach suggests that the topic of a sentence is the set of alternatives induced by the focus part of that sentence. The alternatives are defined as propositions obtained by that which in the given context can be inserted into the associated focus frame. As others have noted too (see, in particular, Partee 1991 and Rooth 1992), there is a non-trivial (and probably fruitful) relation between the alternative set associated with a sentence and Hamblin's (1973) notion of question meaning, formally analyzed as the set of propositions expressed by possible, direct answers to the question.

Characterizations in terms of questions identify the topic which is related to a question-answering sentence with a variety of things. In one approach (Bartsch 1976; Colingwood 1940; Vennemann 1975), the topic is identified with (one of) the presupposition(s) defined by the question. Others directly define the notion of topic in terms of questions and the set of possible ('alternative') answers they give rise to. This view is already central in the works of the British philosopher and (theoretical) psychologist G.F. Stout (e.g., Stout 1896, 1932): 'Questioning involves the thought of a set of incompatible alternatives. In asking a question we know what it is that we want to know in knowing that one or other of these alternatives is the right answer. But we do not know and have not decided, rightly or wrongly, which it is' (1932: 301). The set of incompatible alternatives is taken to be the topic ('psychological subject') of the question-answering sentence. More recently, Carlson (1985), in the tradition of Hamblin (1973), identifies a topic with question meaning, whereas Klein and Von Steutterheim (1987: 164) take as topic what they call the 'alternative,' which they define as 'the choice between two or more possibilities' as an answer to the question posed. Still others (Van Kuppevelt 1991) identify the topic of a sentence with that which is questioned, i.e. an underdetermined singular or plural discourse entity that needs further specification. This underdeterminedness is then expressed in terms of the



corresponding (actual) topic range specifying the (remaining) set of possible extensional counterparts. For all the approaches in terms of questions, the criterion for a sentence to have a topic is that it answers a question. In this respect it is assumed that sentences in discourse can also answer 'implicit,' that is not explicitly formulated, questions. However, when a sentence answers an implicit question, topic identification requires a reconstruction of the implicit question. To date, no fully satisfactory algorithm has been proposed that yields an unambiguous identification of implicit questions in discourse.

#### 4. The Relation Between Sentence Topics and Discourse Topics

Finally, attention will be paid to the relation between sentence topics and discourse topics, thereby refraining from other relevant subjects in this area of research, such as the important question of whether the topic-comment distinction is a syntactic, semantic and/or pragmatic phenomenon and the discussion on focus-sensitive operators.

Those (relatively few) authors who distinguish sentence topics from discourse topics do not agree with regard to the question of the distinctness versus the continuity of the notions 'sentence topic' and 'discourse topic.' In the context of discourse grammar, Van Dijk (1977), for example, assumes two notions which he defines in such a way that they are conceptually unrelated. A sentence topic is identified with an individual entity (or a set of entities or an ordered  $n$ -tuple of entities) about which new information is provided in the sentence. A discourse topic, on the other hand, is identified in terms of the entailments of the set of propositions expressed by the discourse (segment).

A uniform conception of sentence topics and discourse topics is assumed in certain other (formal) variants of discourse grammar (e.g., Polanyi and Scha 1984), in Asher's (1993) theory, which accounts for discourse structure in Discourse Representation Theory (Kamp 1981), as well as in theories of discourse central to which is the structuring function of (implicit) higher- and lower-order topic-forming questions (e.g., Carlson 1985; Klein and Von Steutterheim 1987; Van Kuppevelt 1991). In all these theories only one topic notion is assumed which covers both the notion of sentence topic and that of topic of larger discourse units. Contrary to the discourse theories in terms of questions, the first two approaches do not give a uniform topical account of discourse structure, as would appear from their assumption that not all discourse relations are topic-based. In Carlson's (1985) and Klein and Von Steutterheim's (1987) question theories, for example, hierarchical discourse structure is uniformly determined by topic-forming questions. However, the assigned structures are restricted because only subquestions

of the quantitative type are presupposed: common topics defined by higher-order questions are modularly split up into more specific (entailed) subtopics defined by quantitative subquestions. The theory of Van Kuppevelt (1991 and other publications), on the other hand, provides a uniform, unrestricted topic notion. This notion is central in the explanation of hierarchical discourse structure in general, which is considered to be the result of the dynamics of contextually induced explicit and implicit (sub)topic-forming (sub)questions, thereby also providing a semantic, topical basis for pragmatic inferences known as Gricean conversational implicatures (Grice 1967, 1975). Besides the above-mentioned approaches, new dynamic approaches in terms of topics and questions have recently been proposed within formal semantics (e.g., Ginzburg 1996; Groenendijk and Stokhof 1993, 1996; Roberts 1996, and Zeevat 1994).

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## Topic, Focus, and Word Order

R. Sornicola

### 1. Word Order: Its Controversial Nature

Throughout the history of linguistics, word order has basically been conceived as a phenomenon of a dual nature, first being related to grammar, second to style. As a phenomenon pertaining to grammar, word order is a device that codifies grammatical relations, the result being the 'basic' or fundamental word order patterns of a language. English as well as Italian, French, etc., are languages with a basic SVO order, because the functions of subject and object are, in each of these languages, carried by, respectively, preverbal and postverbal position (*John loves Mary*, where *John* is the subject, compared with *Mary loves John*, where *John* is the object). As a pragmatic phenomenon, word order encompasses those deviations from basic patterns that are due to pragmatic factors, such as, primarily, marked focus placement. (Other influential factors of a pragmatic/semantic nature are the contextual dependency of sentence constituents, which is responsible for the so-called 'theme-rheme distribution,' and also the referentiality and animacy hierarchies, according to which the most referential (or the most animate) element tends to occur on the left of the sentence.)

On the whole, what is implied in this polarized view of word order as a grammatical versus a pragmatic phenomenon is that the conditions determining the

word order patterns of a given natural language are formal, i.e., highly abstract and mechanical, and that functional principles, such as focus placement, contextual dependency, the referentiality and animacy hierarchies, etc., can only at a later stage affect them. This view has been supported in late twentieth-century linguistic research mainly by generative grammarians. It raises more general problems of linguistic theory, concerning the level of representation of syntactic structure on which 'order' should be placed. The idea that order is a mere realization device of structure can be traced back to Meillet and further back to Condillac and has been variously maintained by Tesnière, Halliday, and many other nongenerative linguists. The idea that structural configurations of generative grammar inherently have a linear dimension has from time to time been criticized by those who favor nonlinear models, such as Šaumjan and Soboleva, Sgall, and, in the early 1980s, in different theoretical frameworks, Bresnan and the supporters of relational grammar.

The alternative view has also been defended, according to which in every language word order is determined by the interplay of both formal (i.e., strictly grammatical) and functional factors. This view can be traced back to Mathesius and to the Prague School tradition of syntactic functionalism.

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In this approach every language has a certain degree of sensitivity to functional factors: word order patterns peculiar to different languages are thus the result of different dynamic interactions of such factors with grammatical ones. Grammatical factors, however, are considered as mechanical tendencies at work in every language, which are determined by the habit of always setting the same sentence constituents in the same place.

In this light, the concepts of basic versus 'nonbasic' word order, as well as the concepts of 'fixed' versus 'nonfixed' word order turn out to be idealizations of a high degree, being constructed on purely abstract sentence models rather than being arrived at by observations of real utterances. In dealing with pragmatic functions and word order, however, empirical studies of language in use should be taken into due account.

The two views are both challenged in the following discussion of topic, focus, and word order. However, any overall treatment of this subject cannot escape the fundamental difficulty that so far no unitary account has been proposed in both formal and functional terms. On the one hand, the notions of 'topic' and 'focus' have been introduced in the theoretical framework of generative grammar as terms devoid of their semantic/pragmatic import. On the other hand, the literature on word order often lacks a broader view of the set of possible syntactic structures in natural languages which are associated with functions such as topic and focus. What is more, it lacks a full understanding of formal regularities exhibited by these structures.

The following sections deal first with the crucial notions of topic and focus and second with a set of structures related to these two pragmatic functions which seem to be widely spread across natural languages: topicalization, left dislocation, right dislocation, clefting (in its various subtypes, such as *it*-clefting and *wh*-clefting), raising, passivization, extra-position. Finally, the relation between topic, focus, and syntactic structure is discussed.

### 2. Topic and Focus

There are no all-encompassing definitions of topic and focus in the literature. Both terms cover phenomena belonging to the whole spectrum of syntax, semantics, and pragmatics, with an extension to the phonological level.

Perhaps the most controversial concepts lie at the pragmatic level. Three (at least) definitions of topic and focus can be found with different terminology, but variants of the same thing:

- (a) Topic refers to information already present in linguistic or situational context (i.e., it is the contextually bound unit or configuration of units); focus refers to information nonpresent (or partially present) in linguistic or situational

context (i.e., it is the contextually unbound (or partially unbound) unit or configuration of units). With different terminology these two notions have been opposed to each other as 'given' (topic) versus 'new' (focus).

- (b) Topic (or theme) is the part of the sentence conveying the lowest degree of communicative dynamism; focus (or rheme) is the part with the highest degree of communicative dynamism.
- (c) Topic is presupposed information, focus is non-presupposed information.

It is a fact that has been widely recognized, but for which up till now poor theoretical explanations have been given, that across natural languages there is a high tendency in unmarked sentences to map the contextually bound stretch of the sentence on to the subject and the contextually unbound stretch on to the predicate. This tendency as well as the fact that the overwhelming majority of the world's languages are either SVO or SOV raises a problem concerning linearity. There is in fact no a priori reason why the contextually bound (given/less dynamic/presupposed) part of the sentence should come first.

The same correlation shows itself in the semantic definition associated with the two terms (note, however, that at this level the term 'comment' is often found instead of focus). Here topic is 'what is being spoken about,' focus (or comment) is 'what is being said on what is being spoken about.'

When it comes to a purely syntactic definition of topic and focus, apparently it is the linear dimension of the sentence which is essentially involved. Different models have variously assessed the property of being a topic as the occurrence of a constituent  $x$  in the first position of the sentence. This generalization, however, can be questioned. The property of being an argument of the verb is no less important as a syntactic criterion than purely linear considerations. By a large consensus in the literature only those constituents that convey grammatical functions are considered as candidates for the topic function. Thus languages may have topics that do not occur in the first position of the sentence; to take but one example, the so-called circumstantial elements that express the temporal or spatial setting (in many languages, time or place adverbs) may be placed in the first position, as in the sentence *Yesterday Mary was in a very bad mood*. Here the topic is not *yesterday*, but the constituent with the subject function. Thus the idea seems well-founded that in general a position  $P_1$  should be differentiated from topic position  $P(\text{top})$ , although there will be many cases in which  $P_1 = P(\text{top})$ . Things are further complicated by the fact that the topic often coincides with a phrase with multiple constituents. An alternative and more satisfactory definition would not specify for topic just a unique position  $P_i$ , but a whole range of positions  $P_j \dots P_k$  (where  $j \dots k$  space over a set of integers ranging from 1 to  $k$ ); a further condition



should specify that,  $P_1 \dots P_n$  being the series of positions of syntactic structure,  $P_k$  never coincides with  $P_n$ .

Similar problems are faced in the attempt to obtain a syntactic definition of focus. Here again what is crucial is not merely the position inside the sentence, but also the categorial/functional nature of the constituent involved. Following a purely linear criterion, in fact, one could be led to assume that, at least in unmarked (i.e., nonemphatic) sentences, the focus position is the final one, since the linear dimension of the sentence can be conceived as a serial process of adding information quanta, each quantum conveying a higher information value than its antecedent. This assumption is wrong for two reasons: first, as in the case of topic, focus often does not coincide with a single constituent, but with a configuration of constituents. To resume the preceding example, in the sentence *Yesterday Mary was in a bad mood* the whole string *was in a bad mood* is the focus (or, more precisely, the 'broader focus'), although inside this domain, some constituents are more focal than others (inside the VP domain the focus proper is the NP *a bad mood*; inside the NP domain, in unmarked sentences, the general consensus would be that the focus proper is the modifier *bad* (this is what is called 'narrow focus')). Second, the final position could be occupied by a circumstantial element, which is a typical nonargument of the verb: the previous assignment of 'foci' holds true even in *Mary was in a bad mood yesterday* as well as in *Mary was in a bad mood during her stay in Rome*, when these sentences are uttered with normal intonation contours (i.e., *yesterday* and *during her stay in Rome* have either no nucleus or a secondary one). Similar considerations hold true for other constituents occurring in the final position that do not have a strong dependency relation with the predicate frame and thus are extrasentential (e.g., *he said in John was upset by the War, he said*) or appositional (e.g., *Peter in I have just met my brother, Peter*; note that in *I have just met my brother Peter*, with no pause between *brother* and *Peter* and the nucleus on *Peter*, the latter constituent is the focus proper of the sentence).

One is thus entitled to think that the strength of dependency relations is a fundamental parameter in determining focus. What is suggested here is that focus is correlated to dependency structure. This formulation could be refined in terms of the relation between heads (i.e., governing constituents) and their governed constituents. In unmarked sentences, in fact, natural languages seem to show a correlation between highly focal constituents and the property of being governed. Thus, for example, in sentences with the configuration  $[s_{NP} \dots] + [_{VP} V + [_{NP} ART + ADJ + N_{NP}]_{VP}]s$  the focus would cover the NP (in many cases ADJ would be the focus proper); in sentences with the configuration  $[s_{NP} \dots] + [_{VP} V + [_{pp} PREP +$

$[_{NP} \dots]_{PP}]_{VP}]s$  the focus will cover the PP (with NP as the focus proper—more precisely, the governed constituent, if any, in NP).

Of course, languages vary according to the degree of conformity between the structural and the linear principle of focus assignment. This has to do with typological characteristics affecting grammar to a different extent. Consider, for example, the case of Japanese or other Altaic languages, where the predominant SOV order is systematically reflected in the general operator-operand order. In sentences such as Japanese (1–2) the focus proper (*Rōma* and *akaku*, respectively) does not occur in sentence final position. Languages of this type are thus said to have an 'unsusceptibility to functional sentence perspective' (FSP) (i.e., the linear criterion). In principle, the highest degree of conformity to FSP is exhibited by SVO (or operand-operator) languages. However, even these latter may deviate from it in some part of their grammar. Consider the case of the adjectival prenominal position in English, which results in focus not occurring in phrase-final or sentence-final position:

*Kinoo* (watashi wa) *Rōma e itta* (1)  
yesterday I TOPIC MARKER Rome to have been  
'Yesterday I went to Rome'

*Ano onna noko wa kami o akaku shite iru* (2)  
that girl TOPIC hair OBJECT red has  
MARKER MARKER  
'That girl has red hair'

Finally, to return to the problem of assessing a relationship between linearity (order) and focus, the conclusion cannot be avoided that it is deeply affected by typological characteristics of languages. If focus tends to coincide with predication, and this, in turn, is realized at the configurational level by VP, there is no universally valid focus position. Here indeed crucial and difficult problems of syntactic theory are implied, since for languages with VSO order the major constituent VP is split. Furthermore, in SOV languages, where the governed constituents tend to occur on the left of the verb, focus seems systematically to escape the 'VP last' criterion. This in fact holds particularly for SVO languages.

However, it should be noted that a linear criterion may hold under like conditions of government. If a verb governs both an NP and a PP, the last governed major constituent in the VP is the focus (with the last governed lexical category as the focus proper).

A third criterion may impose itself. Semantic criteria may interact with both dependency and linearity. An interesting example is the so-called double-object construction of English. In *I gave a book to Mary* versus *I gave Mary a book*, a role is played by the animacy hierarchy of constituents, according to the principle of 'the most animate first.' Again, the linear criterion seems to determine the focus as the last argument of the verb.

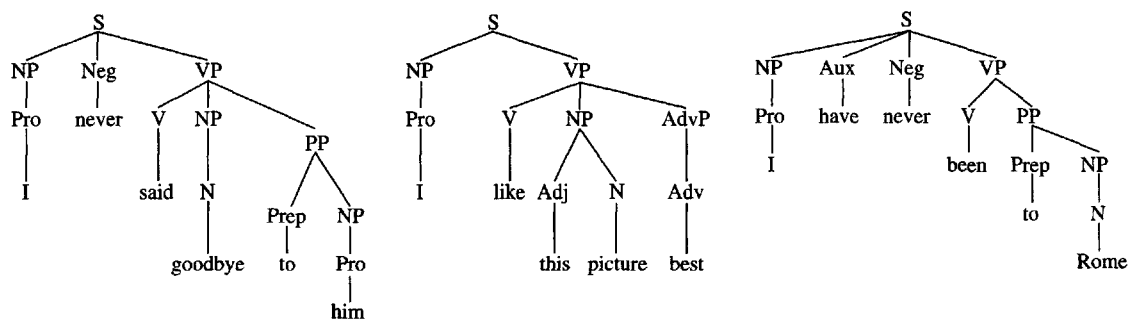


Figure 1a.

The previous discussion has been concerned with 'unmarked' focus distribution. At this point, however, it must be noted that linear properties of 'marked' focus distribution, that is, the distribution in emphatic sentences, strongly deviate from what has been called the *ordo naturalis* principle, arranging the information increase along a left to right direction. This different distribution conforms rather to an inverse flow of information according to a decrease from left to right in the sentence. Thus, for example, in *To Rome I've never been* or in *These things we like*, focus is placed in P<sub>1</sub>.

So far an attempt has been made at defining focus in terms of linear, structural, and semantic properties. None of these, however, is in itself sufficient. The same is true of suprasegmental correlates of focus, such as variations in pitch, length, and loudness. All these properties can be considered as realization devices of a more abstract notion of a pragmatic nature, that is, 'prominence.' A similar conclusion can be reached for the notion of topic, whose configurational and prosodic properties are envisaged in late twentieth-century literature as devices that codify the pragmatic notion of 'center of attention.'

Another possibility is to think of topic and focus as pragmatic primitives of grammar, with which particular structures can be associated in different languages (this idea has been maintained by Lakoff (1971) and by Dik (1978, 1989)). This could be especially useful in the treatment of configurational regularities concerning order, which are involved in such phenomena as topicalization, left dislocation, right dislocation, and clefting. However, the approach in terms of pragmatic primitives seems more satisfactory in the framework of a formal theory than for research on empirical properties of natural languages. On the other hand, if topic and focus are defined in terms of configurations, the definition of the associated phenomena becomes rather circular.

The next section combines pragmatic and syntactic approaches in an examination of syntactic structures related to topic and focus.

### 3. Topic-related Structure

#### 3.1 A General Definition

When the syntax of topic is discussed in the literature it is generally both the linear and the argumental criteria which override the pragmatic one. Thus in this section the topic will be identified as the item in one of the initial positions of the sentence which conveys a grammatical function.

Perhaps the most general syntactic property of the class of topic-related structures might be determined as the occurrence in the sentence P (top) position of a constituent with a different grammatical function from that of the subject. It can be argued, in fact, that a hierarchy of accessibility to topic position can be established in natural languages, with subject being the prime candidate for P(top):

- Subject > Indirect object > Direct object  
> Locative complement > Manner complement (3)

The above definition can account for sentences such as (4–6):

To him I never said good-bye (4)

This picture I like best (5)

To Rome I've never been (6)

whose structures can be thought of as derived respectively from (4'–6'):

I never said good-bye to him (4')

I like this picture best (5')

I've never been to Rome (6')

By adopting a phrase-structure tree of the kind used in generative grammar to represent the base structures (4'–6'), shown in Fig. 1a, it can easily be understood that sentences (4–6) are derived by a movement rule raising the nodes PP, NP, PP to the top node as shown in Fig. 1b.

#### 3.2 Hanging Topic

The definition in example (3), however, needs to be further refined in order to be really workable for the

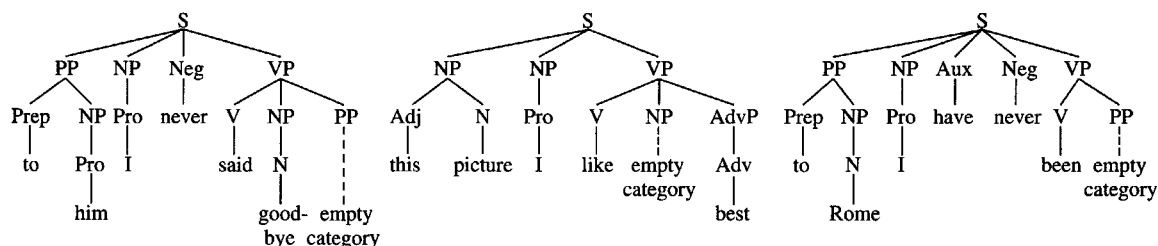


Figure 1b.

large variety of topic-related phenomena occurring in natural languages. Consider for example the following Mandarin Chinese (7–8), Japanese (9), and Lahu (10–11) sentences (from Li and Thompson 1976: 462):

*Nèi-chang huǒ xìngkuài xiǎofāng-duì* (7)  
that-classifier fire fortunate fire-brigade  
lái de kuài  
come ADV particle quick  
'That fire, fortunately the fire-brigade came quickly'

*Nèi-xie shùmu shù-shēn dà* (8)  
those tree tree-trunk big  
'Those trees, the trunks are big'

*Gakkoo-wa boku-ga isogasi-kat-ta* (9)  
School-topic marker I-subject marker busy-past tense  
'School, I was busy'

*Hē chi tē pē? ǒ dà? jā* (10)  
Field this one classifier rice very good  
'This field, the rice is very good'

*Hǎ ǒ na-qhǒ yǎ ve yò* (11)  
elephant TOPIC nose LONG DECLARATIVE  
MARKER PARTICLE MARKER  
'Elephants, noses are long'

In these sentences the elements occupying position P(top) are ungoverned by the verb (a more technical formulation of this would be that they do not have any selectional relation to the main verb). Thus the basic representation of (7–11) would be as shown in Fig. 2. It seems reasonable then to differentiate two fundamental classes of topic-related phenomena, the first having to do with extra sentential constituents in P(top) which constitute a kind of hanging topic, the second with sentential arguments moved or extra-posed to P(top).

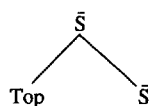


Figure 2.

Languages may vary as to the permissible range of topicalization. According to a well-known hypothesis by Li and Thompson two main language types can be recognized around the world, topic-prominent and subject-prominent languages. Topicalizations of the kind shown in sentences (7–11) would be permissible in topic-prominent languages, but not in subject-prominent ones. However, the typological distinction per se is rather questionable, since the range of possible topicalization allowed by a given language seems to be related to sociolinguistic parameters such as the speaker's capability to plan the discourse (planned/unplanned discourse), different strategies in spoken versus written communication, the speaker's level of education, and so on. Spoken registers of what would be believed on the evidence of written data to be subject-prominent languages do exhibit structures like sentences (7–11). Examples (12–13) are from a corpus of spoken Italian:

*La scuola, mi sono messo in congedo* (12)  
The school I have taken a leave  
'As to the school, I have taken a leave'

*La radio, hanno trasmesso un programma interessante* (13)  
The radio they have transmitted a program interesting  
On the radio they have transmitted an interesting program'

### 3.3 Left Dislocation and Topicalization

The second class (moved sentence arguments) can be further divided into two subclasses, according to the presence (e.g., 14) or absence (e.g., 15) of anaphoric relations between the constituent moved to the top node and a coreferential pronoun filling the position which was previously occupied by it (note, however, that Italian and French sentences such as (15) and (16) would require further observations to justify the position occupied by the coreferential pronoun):

John Smith, I haven't met him for a long time (14)

*Cet élève, je l'aime bien* (15)  
'That pupil, I like her very much'

## Topic, Focus, and Word Order

*Patrizia, l'ho vista ieri* (16)  
'Patrizia, I saw her yesterday'

These problems they can't deal with (17)

*Il decano ho incontrato ieri* (18)  
The dean I met yesterday  
'It is the dean I met yesterday'

Structures such as (14–16) are instances of 'left dislocation,' structures (17–18) of 'topicalization' (or 'fronting'). There seems to be, at least in many European languages, a difference in the pragmatic value of structures (14–16) and (17–18): while in the first structures the topic may not convey emphasis (unless specific suprasegmental features are associated with it), in the latter ones it seems the case that the constituent in P(top) has a contrastive value. In other words, it could be said that in sentences such as (17–18) the topic function coincides with the focus function, a peculiar property from the pragmatic point of view, related to marked word order.

From the syntactic point of view, however, rules generating both structures (14–16) and (17–18) have for a long time been recognized as being of a 'movement' nature.

An interesting problem concerns the range of constituents that may undergo movement rules of this kind. Not surprisingly, languages vary as to this range, although a strong tendency can be recognized to put in P(top) nonverbal constituents. In European languages, for example, ADJP, PP, ADVP, in addition to NP, are constituents that are allowed to move to P(top), although there is a difference from language to language as to the pragmatic value associated with the syntactic operation. For example, in both Italian and English, adjective or adverb movement to the top node results in structures conveying emphasis, as can be seen comparing the translations (19–22):

... e rosso era (19)

... and red it was (20)

*volentieri venne* (21)

willingly he came (22)

### 3.4 Raising and Passivization

Left dislocation shows the same property of constituent moving leftward to P(top), as structures which have undergone raising processes. These can be exemplified by English constructions where an NP is 'raised' out of subordinate clause subject position into main clause subject position:

Mary seems to me to be happy (23)

Another interesting similarity is shown in passivization processes, which also have the property of moving an NP constituent leftward. It has been recognized for a long time in the literature that passive sentences can be represented as structures derived from the

corresponding active ones by means of movement rules (and morphological alterations of the verb, which will not be considered here). From the pragmatic point of view, passivization has convincingly been argued to be but another case of bringing into P(top) (i.e., into the 'center of attention') the NP with the grammatical function object at some underlying level of representation.

### 3.5 Clefting

Clefting encompasses another class of syntactic processes which are related to topic-focus distribution. The term covers various subtypes of processes, some of them more properly similar to the topic-related ones. These will be referred to as subtype A. Other clefting processes result in structures of the equative kind. These will be referred to as subtype B, to be dealt with in Sect. 4.

Languages tend to differ as to minor details in the structure generated by A-clefting, as will be clear from the following examples from typologically and/or genetically different languages (with examples (24–27) being translations each of the other):

It is me who said that (24)

*C'est moi qui l'ai dit* (French) (25)

*Soy yo quien lo he dicho* (Spanish) (26)

*Sono io che l'ho detto* (Italian) (27)

*Shì wǒ lái zhèr* (Mandarin Chinese) (28)

Be I come here  
'It is me who comes here'

*Kuttiyaanā aanaye nulliyatē* (Malayalam) (29)

Child-is elephant pinched-it  
'It was the child who pinched the elephant'

In all these examples the verb 'be' acts as a device assigning the focus function to the NP that immediately follows (cf. 24–28) or precedes (cf. 29). As the occurrence of a dummy subject before the verb 'be' is a feature irrelevant here—it has to do with more idiosyncratic language tendencies—it can be said that the more general A-clefting pattern is represented by (30):

'Be' + NP + S̄ (30)

where NP carries the focus function. Here again, as in the case of topicalization, a single constituent has both the functions of topic ('be' is no candidate for topichood) and focus.

The properties of A-clefting are similar to those of topic-related processes also from a strictly syntactic point of view. The range of constituents that may occur in postcopular position constitutes in fact a class identified by the feature [-verbal]. Note, however, that here again languages seem to vary as to the width of the [-verbal] class, i.e., as to the range of constituents that are allowed to occupy the postcopular position. For example, in languages such as



English or Italian only NPs, PPs, and time and place adverbs may occur in that position (English *\*It is yellow that it is* and the Italian translation *\*E' giallo che è*; English *\*It is well that I have found him* and the Italian translation *\*E' bene che l'ho trovato*), whereas in Welsh adverbs and adjectives may also do so:

*Bit chuero y talhaur* (Middle Welsh) (31)  
(It) will be bitterly that (it) will be paid for

More problematic is to decide whether A-clefting should be considered as a movement process (like left-dislocation and topicalization) or not. Examples such as (24–28), where an NP with the grammatical function subject occurs in postcopular position, are not generated by movement rules. Their structures could rather be base-generated with NP in P(top). This is not the case with (32):

It is you that I am looking after (32)

whose structure is obviously related to (33):

I am looking after you (33)

and could be derived from it by a movement rule.

#### 4. Syntactic Processes that keep the Focus in Unmarked Position

Syntactic processes whose pragmatic import is the focalization of a constituent are less homogeneous than those related to the topic. As a matter of fact, no general definition of focalization processes can be formulated in terms of syntactic configurations, nor in terms of grammatical relations. What could be said would be rather tautological: in unmarked conditions syntactic processes related to focus either keep or move a constituent rightward in the sentence i.e., in the domain of the unmarked focus (of course this definition would not include structures with marked focus, such as the ones in Sect. 3.5).

The normal distribution of focus as described in Sect. 2 is kept in structures such as *wh*-clefts (34–35):

The one who lies is he (34)

What is in question is his reputation as a scientist (35)

These are sentences with an equative-identifying value, which are generated by type B-clefting. The more general B-clefting pattern can be represented by:

$X + \text{be} + Y$  (36)

where both X and Y can be any of the categories in the set (NP,  $\bar{S}$ ). Other equative sentences conforming to pattern (36) are of a kind that is rather frequent in spoken language:

The thing is (that) they are in trouble (37)

The point is that they have never understood the situation (38)

It is worth mentioning that structure (36) has two fundamental properties: (a) reversibility, i.e., its reverse structure (36'):

$Y + \text{be} + X$  (36')

is also well-formed (sentences like (37–38) clearly deviate from this regularity); and (b) the marking of X by the feature [-definite] (more precisely, if X = NP, the head of NP is [-definite]; if X =  $\bar{S}$ , the head of the NP with the subject function is [-definite]).

Sentences conforming to pattern (36) have the focus function stretching over the postcopular constituent. Note that a conflict between the linear and the semantic criteria arises in reverse sentences such as (39):

John is the one who went to Edinburgh (39)

Here in fact the feature [-definite] in the postcopular constituent is incompatible with focality (or less compatible than the feature [+definite]). It can be seen, however, how powerful the linear criterion is, as it overrides the unfavorable semantic feature, assigning the focus function to the postcopular constituent.

An interesting and peculiar effect is obtained in structures with an anaphoric pronoun anticipating either a direct object or an indirect object (or both), as in the following examples from Romance languages:

*La he visto a tu mujer* (Spanish) (40)  
Her I have seen to your wife  
'I did see your wife'

*Gliela raccontai la notizia* (Italian) (41)  
a Maria  
To her + it I told the piece of news  
to Mary  
'I did tell the piece of news to Mary'

*Je l' ai donné le livre* (French) (42)  
I it have given the book  
'I did give the book as a gift'

Here the focus is not on the last sentential argument (*a tu mujer* in (40); *a Maria* in (41); *le livre* in (42)), as in the corresponding sentences without pronominal copies before the verb (40'–42'):

*He visto a tu mujer* (40')

*Raccontai la notizia a Maria* (41')

*J'ai donné le livre* (42')

Rather, it is shifted leftward on the verb.

##### 4.1 Right Dislocation and Extraposition

Structures with right dislocation of the subject, such as (43):

*Hanno considerato il caso molti esperti* (Italian) (43)  
They have considered the case many experts  
'Many experts have considered the case'

are instances of syntactic processes moving in focus what normally is a nonfocal constituent. Another case in point is extraposition, as in (44):

A critical review has just appeared of his latest book (44)

## Topic, Focus, and Word Order

where the PP of *his latest book* is detached from NP with the subject function and moved rightward in focus.

### 5. Topic and Focus as Pragmatic Primitives and Syntactic Structure

In this concluding section a few general remarks will be attempted on the relationship between topic, focus, and word order as well as on the nature of topic and focus themselves.

In Sect. 2 it was pointed out that topic and focus are to be considered as pragmatic functions which should be defined neither in terms of syntactic structure nor in terms of prosodic structure. Rather, they should be conceived as independent functions with structural correlates (of a syntactic and prosodic kind). In the light of what has been observed in the last paragraphs two important correlations can be pointed out between topic, focus, and syntactic structure. The first deals precisely with word order. Topic is related to syntactic processes that keep a unit in the leftmost position, out of the sentence pattern proper, or to syntactic processes that result in moving a specific constituent leftward in the sentence. On the other hand, focus is related to syntactic processes that keep or move a constituent rightward in the sentence. This of course conforms to the linear distribution of topic and focus, as has already been pointed out in Sect. 2.

The left-to-right dimension observed, however, is to be connected to two pragmatic notions such as 'center of attention' and 'prominence,' whose import is of a cognitive nature: constituents occurring leftward (leftmost) in the sentence belong to that part of the utterance which is the center of attention for the speaker/listener (finer considerations would be highly desirable as to possible differences between speakers and listeners in establishing centers of attention; in fact much more experimental work is needed here). On the other hand, constituents occurring rightward (rightmost) in a connected sentence will probably set up prominence peaks. As a matter of fact, it seems a fairly general property of human communication under nonemphatic conditions, to organize the information flow in the utterance according to a strategy of centering attention on specific information units first, and then giving prominence to others. This might well be a universal tendency across natural languages, which accounts for semantic or structural configurations such as topic-comment, subject-predicate, NP-VP, etc.

The second correlation between topic, focus, and syntactic structure concerns: (a) the nonverbal nature of constituents that across natural languages are more frequently allowed to occupy topic position, i.e., the center of attention in the information flow; and (b) the lack of categorical restrictions on constituents in focus. The first property could be formulated in terms of the topic position ruling out elements that bear

predication and requiring referential ones. The relationship between topic and referentiality might lead to a cross-linguistic generalization of a pragmatic nature, that is, only constituents with a referential value can function as centers of attention. As to the second property, it should be noted that the lack of categorical restrictions only concerns lexical categories and not major categories: under nonemphatic conditions, VP is in fact the normal domain of the focus function in subject-initial languages. Thus the conclusion can be reached that prominence in principle is to be correlated to predication. Note that this is the case not only when focus stretches over VP, but also in marked structures such as those in Sect. 3.5, where the topic and focus functions collapse together. Predication carried out in this latter case seems to be of a special kind, which may be described as 'identifying.' Sentences with emphatic topicalization or clefting, in fact, can be analyzed as having a double predication pattern, the first associated to the leftmost NP, the second to the following stretch of utterance.

What has been said seems to have some consequences for the study of topic and focus. One of the problems in any attempt to combine pragmatic and syntactic analysis in the study of topic, focus, and syntactic structure has been the fuzziness of notions such as topic and focus themselves. It has already been pointed out in Sect. 2 that if their definition is to be kept separated from syntactic structures, no option remains but to consider them as primitives. This is far from being a satisfactory conclusion however, at least for a full understanding of how phenomena of natural languages work. On the other hand, if topic and focus are given the empirical content of center of attention and prominence, respectively, the problem of further differentiating these two notions is left open. Although an answer to this can be expected to come mainly from psycholinguistic work, the case of topic and focus collapsing together can give some provisional hints. If prominence is defined as an identifying predication, the affinity of the two pragmatic notions will show itself as a consequence. Identifying, after all, is related to referentiality. Thus, center of attention and prominence can be considered as two notions that can be differentiated in degree, being of the same nature: prominence, in fact, could be conceived as the high degree of attention centering. In this light, syntactic processes such as left-dislocation, topicalization, clefting, and the like are nothing else than effects of pragmatic and cognitive properties of the human mind and human communication.

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## Transitivity

T. Tsunoda

The term 'transitivity'—derived from Latin *trans* 'across' and *ire* 'go'—concerns linguistic phenomena which have to do with transitive clauses, including their relationship to intransitive clauses.

Terms such as 'transitivity,' 'transitive clauses' (TransCls), and 'intransitive clauses' (IntrCls) are often employed in linguistic literature, such as dictionaries and textbooks of linguistics, grammars of individual languages, and works on grammatical theories. It may seem obvious what these terms refer to. However, a close examination reveals that this is not really the case.

### 1. The Traditional Concept of Transitivity

Fairly standard statements of traditional concepts of transitivity (TradConcTrans) are something like the following (see Hartmann and Stork 1972: 155–56, 118, 242; Richards et al. 1985: 198, 298):

- (a) TransCls contain an object. An activity/action 'goes across' from the subject to the object. It is sometimes stated additionally that the object is affected by the activity, and/or that TransCls can be turned into passive clauses.

- (b) IntrCls lack an object. No activity is transferred.

Examples of TransCls include:

- Brutus killed Caesar. (1)
- I hit him. (2)
- John saw Mary. (3)
- Everyone likes beer. (4)
- Bill has many books. (5)

Examples of IntrCls include:

- He sat down. (6)
- Kim died yesterday. (7)
- Many problems remain. (8)

A look at these examples may suggest that the issue of transitivity is straightforward. However, there are certain problems with the TradConcTrans (cf., Jespersen 1924: 157–58; Robins 1964: 265–66; Lyons 1968: 350–51):

- (a) Regarding TransCls, indeed the action goes

across from the subject to the object in instances such as (1) and (2). But this is not true of other instances; no action is involved. Furthermore, in instances such as (3) and (4), if anything passes over, it is the stimulus for the perception or emotion that does so. But it goes in the opposite direction, i.e., from the object to the subject.

- (b) Instances such as (5) are considered TransCls, but they lack a corresponding passive clause:

\*Many books are had by Bill. (9)

In contrast, instances such as (10) and (12) are regarded as IntrCls, but they can have a corresponding passive clause:

Ed bumped into Sue. (10)

Sue was bumped into by Ed. (11)

Kay looked at Di. (12)

Di was looked at by Kay. (13)

- (c) Instances such as (10) are not considered TransCls despite the fact that the action does pass over. These problems stem from facts such as the following:

- (i) The TradConcTrans did not clearly distinguish between the semantic aspect (i.e., the transference of an activity) and the morphological and/or syntactic aspect (i.e., the existence of an object, and possibility of passivization) of transitivity. Consequently, it failed to recognize that these two aspects do not always coincide with each other.
- (ii) The TradConcTrans assumed a clear-cut dichotomy between TransCls and IntrCls. As a result, it failed to accommodate intermediate cases such as (3) to (5), (10), and (12).

The examples cited above are taken from English, but the problems identified above are also found in the grammars of other languages.

Two additional problems are encountered in languages which are considerably different from English:

- (d) The TradConcTrans involves the notions of 'subject' and 'object.' These notions were developed in the studies of languages such as English and those similar to it, and they are useful for descriptions thereof. However, it has been argued that they are inapplicable to certain types of languages which are radically different from languages like English. That is, a universally valid definition of transitivity will need to avoid reference to 'subject' and 'object.'
- (e) Passivizability is often considered a characteristic of TransCls. But IntrCls, too, may be passivized in, e.g., German, Latin, and Turkish (Lyons 1968: 379–80). Also, passives are absent in many languages. That is, passivizability is

not a universal characteristic of TransCls. As well, properties other than passivizability may be taken to adequately characterize TransCls—particularly so in languages which are different from English, etc. That is, it is necessary to examine a full range of possible properties of TransCls.

As is obvious by now, the TradConcTrans needs to be modified.

## 2. A Modified Characterization of Transitivity

A modified characterization of transitivity ('ModCharTrans') is presented below. It is devised in such a way as to avoid the problems noted above:

- (a) The ModCharTrans explicitly distinguishes between the semantic and morphosyntactic aspects of transitivity.
- (b) The ModCharTrans maintains that transitivity is a matter of degree. That is, TransCls and IntrCls do not exhibit a sharp division, but rather they constitute a continuum. Specifically, the ModCharTrans postulates prototypical transitive clauses ('ProtoTransCls'), which in turn may be used as criteria for measuring the degree of transitivity of other clauses.

### 2.1 The Semantic Aspect

It has been proposed that the semantic aspect of transitivity may be stated more explicitly. Specifically, that ProtoTransCls may be postulated and that their semantic aspect may be decomposed into semantic factors such as the following (Hopper and Thompson 1980, cf., also Givón 1985: 90):

- (a) Participants: There are two (or more) participants: agent and patient.
- (b) Agent: The agent carries out an activity volitionally and controls it.
- (c) Activity: The activity is completed, realized, punctual, actual or affirmative (rather than uncompleted, unrealized, durative, potential or negative).
- (d) Patient: The patient is affected by the activity, a change being caused in it.

In this connection, prototypical transitive verbs ('ProtoTransVs') may be posited and defined as those verbs which describe an activity which causes a change in the patient. In English, they are verbs such as *kill, break, hurt, make, create, improve, clean, increase, decrease, stop, move, sadden, upset, melt, heat, warm, hide, cover, give, and send*, e.g., (1). They all describe a change of one kind or another. (Most of these English verbs can also be used as intransitive verbs; compare (83) and (84).)

Other transitive verbs are not ProtoTransVs. Verbs such as *hit, kick, and shoot* are often used in examples of TransCls (of English, at least, e.g., Robins 1964: 266; Lyons 1968: 350–51; Hartmann and Stork 1972: 242; Huddleston 1988: 53); see (2). But they are not



ProtoTransVs according to the definition presented above. This is because, although the activities they describe impinge on the patient, they do not necessarily imply a change in it. In contrast, killing, for instance, necessarily implies such a change, i.e., the victim's death.

The distinction between these two types of verbs is not apparent in English, but it is readily observable in, for instance, Newari of Nepal. In this language, verbs such as *kill* and *break* take the ergative-absolutive case frame, while those such as *hit* and *kick* take the ergative-dative case frame:

jī: shrestha-φ syā-nā. (14)  
1SG.ERG Shrestha-ABS kill-PERF  
'I killed Shrestha.'

jī: shrestha-yāta dā-yā. (15)  
1SG.ERG Shrestha-DAT hit-PERF  
'I hit Shrestha.'

(For 'ergative' and 'absolutive,' see Sect. 2.2.3.) In languages in which these two types of verbs take different case frames, it is always that of verbs such as *kill* which is considered the transitive case frame.

The semantic characterization of ProtoTransCls presented at the beginning of this section is indeed comprehensive. However, a survey of the grammars of the world's languages suggests that the semantic factors (a) to (d) above are not equally relevant to a semantic characterization of what have been traditionally considered TransCls. The factors (a) and (d) are pertinent for this purpose in all languages. The factor (c) is less relevant, being applicable to only a portion of the world's languages, and the factor (b) is by far the least relevant.

Then, for a practical purpose, the factors (a) and (d) are sufficient, and ProtoTransCls may be simply defined as those clauses which have two participants and whose predicate is a ProtoTransV.

## 2.2 The Morphosyntactic Aspect

### 2.2.1 An Inventory of Morphosyntactic Properties

Morphosyntactic properties such as the following have been identified as those of ProtoTransCls, or as criteria for a distinction between TransCls and IntrCls (cf., Robins 1964: 254–55, 265–66; Hopper and Thompson 1980): (a) linguistic expressions of the two participants (agent and patient), (b) case frame, (c) possibility of corresponding constructions such as passives and antipassives, and of related constructions such as reflexives and reciprocals, (d) cross-reference, (e) verb morphology, and (f) word order.

The properties (a) and (b) have been traditionally used as criteria for the purpose at issue. They are relevant in all languages. Regarding the property (c), at least passivizability has been traditionally used as such a criterion. All of the four construction types listed are widely attested, although usually a given

language does not possess all of them. As such criteria, the properties (d) and (e) seem less common, and the property (f) the least common.

It should be noted that if a given property is shared not only by ProtoTransCls but also by all other clauses of a given language, then obviously that property is of no use as such a criterion. It should also be noted that not all ProtoTransCls of a given language may possess exactly the same properties.

The following two sections furnish additional comments on the properties (a) and (b).

### 2.2.2 Linguistic Expressions of Two Participants

Clauses may be classified in terms of the number of the participants they have; terms such as 'one-place,' 'two-place,' etc. (Lyons 1968: 350) are convenient for this purpose. As an illustration, what have been traditionally considered TransCls and IntrCls may be classified as follows.

TransCls are at least two-place, e.g., (1) to (5). Certain TransCls are three-place, e.g.:

Ed gave the bag to Di. (16)

Ed gave Di the bag. (17)

According to another terminology (see Richards, et al. 1985: 298; Huddleston 1988: 57), TransCls such as (1) to (5), which have one 'object,' are 'monotransitive,' while those like (16) and (17), which have two 'objects,' are 'ditransitive.'

Many instances of IntrCls are one-place, e.g., (6) to (8). There are also two-place IntrCls, e.g., (10), (12). In addition, zero-place clauses must be recognized as a type of IntrCls: they are used for expressions of weather, time, etc. in many languages. An example from Japanese:

Suzusi-i. (18)  
cool-PRES/FUT  
'It is cool.'

Languages such as English disallow such zero-place clauses and employ a 'dummy subject,' e.g., *it* for English, but 'dummy subjects' do not refer to any participant.

Now, as noted in Sect. 2.2.1, the property (a), 'linguistic expressions of two participants' is relevant for a characterization of TransCls in all languages; a Proto-TransCl necessarily contains linguistic expressions of the agent and the patient. Note that a clause which, semantically speaking, contains the two participants may not always linguistically express both of them. Thus, consider the following examples from English:

He drinks wine. (19)

He drinks between meals. (20)

*Drink* is used 'transitively,' i.e., with an 'object,' in (19), and 'intransitively' or 'absolutely,' i.e., without an 'object,' in (20) (see Jespersen 1924: 158; Lyons

1968: 360–61). Semantically speaking, these clauses each contain two participants, for drinking necessarily requires a drinker and a drink. However, in terms of linguistic expressions, only (19) expresses both of them, and (20) leaves the drink unmentioned.

Linguistic expressions of the two participants are primarily by means of words, such as nouns, pronouns, etc.; many examples are given above. But they may involve crossreference markers as well. Such markers are generally affixes, e.g., (33) and (34), or clitics, e.g., (73) and (74).

Note that the statement of the property (a) avoids the terms ‘subject’ and ‘object,’ and instead employs the universally applicable semantic terms ‘participants,’ ‘agent,’ and ‘patient.’ This is in view of the claim that the notions ‘subject’ and ‘object’ do not apply to all languages.

### 2.2.3 Case Frame

This property, too, is relevant in all languages. Linguistic expressions of the two participants necessarily have a case frame of one kind or another, and, in every language, ProtoTransCls have one case frame (or more) associated with them. (Strictly speaking, this statement does apply to words, such as nouns and pronouns, but does not always apply to crossreference markers.)

A number of case-marking patterns have been proposed (cf., Comrie 1978: 332), of which the three patterns shown in Fig. 1 are the most widely attested among the world’s languages. ‘Agent’ (‘agt’) and ‘patient’ (‘ptt’) refer to those of ProtoTransCls, and ‘Si’ refers to (the linguistic expression of) the sole participant of IntrCls. As can be seen, these case-marking patterns are based on how the agent, patient and Si are differentiated (or not differentiated). Use of either of ‘nominative’ and ‘absolutive’ for the neutral pattern is confusing, but no alternative label is forthcoming.

In English, the (personal) pronouns except for *you* and *it* have the accusative pattern, and their case frame for ProtoTransCls is NOM-ACC:

He (agt, NOM) killed her (ptt, ACC). (21)

He (Si, NOM) slipped. (22)

*You*, *it*, and nouns, demonstratives, etc. have the neutral pattern, and their case frame for ProtoTransCls is NOM-NOM:

Ed (agt, NOM) killed Di (ptt, NOM). (23)

Kim (Si, NOM) went away. (24)

Naturally, a clause may exhibit a mixture of the two patterns, and in such instances the case frames of ProtoTransCls are NOM-ACC and NOM-NOM:

Ed (agt, NOM) killed her (ptt, ACC). (25)

He (agt, NOM) killed Di (ptt, NOM). (26)

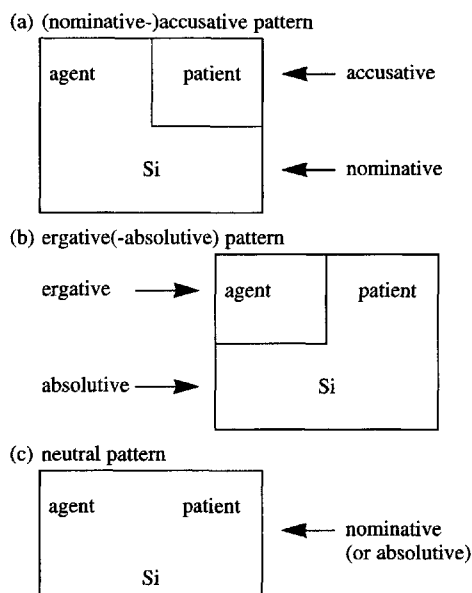


Figure 1. Selected case-marking patterns.

Other frames with two cases do exist, but they are not case frames of ProtoTransCls. They include NOM-*at*, NOM-*to*, NOM-*into*, NOM-*on*, NOM-*for*, NOM-*of*, and NOM-*with*, e.g., (10), (12), and (58) to (61).

Like English, many other languages of Europe, e.g., German and Russian, exhibit the coexistence of the accusative and the neutral patterns:

In Japanese, cases are indicated by postpositions. They have the accusative pattern, and the case frame of ProtoTransCls is NOM-ACC:

Taroo ga Hanako o koros-ita. (27)

Taroo NOM Hanako ACC kill-PAST  
‘Taroo killed Hanako.’

Taroo ga suwat-ta. (28)

Taroo NOM sit-PAST  
‘Taroo sat down.’

Case frames other than NOM-ACC are not the case frame of ProtoTransCls. They include NOM-DAT, DAT-NOM, and NOM-NOM, e.g., (80).

Many other languages of the world, e.g., Korean, Hungarian, Turkish, Tamil (India), Maori (New Zealand) and Quechua (Peru, Ecuador and Bolivia), possess the accusative system, often to the exclusion of other patterns.

In Warrungu of Queensland, Australia, cases are generally indicated by suffixes. (With certain pronouns, demarcation of such suffixes is problematic, and in such instances the potential suffixes are left undemarcated, and the relevant glosses are preceded by a comma rather than by a hyphen. Similarly for certain examples from other languages.) Roughly

speaking, pronouns have the accusative pattern, and their case frame of ProtoTransCls is NOM-ACC:

ngali- $\phi$       pula-nya      palka-n.      (29)  
1DUAL-NOM    3DUAL-ACC    kill-PAST/PRES  
'We-two killed/(kill) them-two.'

ngali- $\phi$       nyina-n.      (30)  
1DUAL-NOM    sit-PAST/PRES  
'We-two sat down.'

Roughly speaking, nouns, demonstratives, etc. have the ergative pattern, and their case frame for ProtoTransCls is ERG-ABS:

pama-ngku    kantu- $\phi$       palka-n.      (31)  
man-ERG    dog-ABS    kill-PAST/PRES  
'The man killed a dog.'

pama- $\phi$     nyina-n.      (32)  
man-ABS    sit-PAST/PRES  
'The man sat down.'

Naturally, a clause may exhibit a mixture of the two patterns, and in such instances the case frames of ProtoTransCls are NOM-ABS and ERG-ACC. Case frames other than NOM-ACC, ERG-ABS, NOM-ABS and ERG-ACC are not case frames of ProtoTransCls. They include NOM-DAT and ABS-DAT; and NOM-LOC and ABS-LOC. Like Warrungu, many other languages of Australia demonstrate the coexistence of the accusative and the ergative patterns.

The examples of the case-marking patterns given above all involve words, such as nouns and pronouns. But crossreference markers—which are generally clitics or affixes rather than words—may also have a case-marking pattern. Thus, crossreference in Mam of Guatemala employs prefixes. Roughly speaking, the crossreferencing person-number prefixes have the ergative pattern, while nouns, pronouns, etc., have the neutral pattern. (The label 'nominative' is tentatively used for the latter.) The case frame of ProtoTransCls is ERG-ABS for the former, and NOM-NOM for the latter:

(33)

	ma		t-yuupa-n		Cheep q'aa'.	
	$\phi$ -ku7-x		3SG,		3SG,	
REC	3SG,		ABS-DIR-DIR		ERG-put out-DS	
	ABS-DIR-DIR		NOM		NOM	

'José put out the fire.'

(34)

	ma		xu7j.	
	$\phi$ -beet		3SG, ABS-walk	
REC	3SG, ABS-walk		woman, NOM	

'The woman walked.'

(REC, 'recent past'; DIR, 'directional'; DS, 'directional suffix.') In all members of the Mayan language family of Central America, including Mam, crossreference markers have the ergative pattern (with variations in certain languages), while pronouns, nouns, etc., have the neutral pattern.

## 2.2.4 Illustrations from Two Selected Languages

The morphosyntactic properties of ProtoTransCls, or those morphosyntactic properties which are relevant for a distinction between TransCls and IntrCls, in English and Warrungu are given below.

For English, the case frames of ProtoTransCls are, as seen above, NOM-ACC and NOM-NOM. Word order is relevant, but only marginally. That is, the usual order in TransCls (including ProtoTransCls) is subject-verb-object and that of IntrCls is subject-verb. (The notions of 'subject' and 'object' are valid, and indeed indispensable for English grammar.) Now, certain (though not all) IntrCls allow the inversion of the subject and the verb:

Bill rushed into the room. (35)

Into the room rushed Bill. (36)

But TransCls prohibit this inversion:

Harry pushed Bill into the room. (37)

\*Into the room pushed Harry Bill. (38)

That is, in contrast with certain IntrCls, TransCls must retain the subject-verb order (see Penhallurick 1984). Similarly, auxiliary verbs are marginally relevant. In the perfect aspect, certain IntrCls—those involving *go*, *come*, *rise*, etc.—may employ either *have* or *be*, while all other IntrCls and also TransCls use *have* only:

The pain has gone. (39)

All hope is gone. (40)

Have you seen John lately? (41)

\*Are you seen John lately? (42)

A similar, though not identical, situation obtains in the use of *avoir* 'have' and *être* 'be' in the compound tenses of French. Under appropriate circumstances, ProtoTransCls may have corresponding or related passive, reflexive and reciprocal clauses. Thus, compare:

Ed killed Di. (43)

Di was killed by Ed. (44)

Ed killed himself. (45)

Ed and Di killed each other. (46)

For Warrungu, the case frames of ProtoTransCls are, as seen above, NOM-ACC, ERG-ABS, NOM-ABS, and ERG-ACC. ProtoTransCls may have corresponding or related antipassive ('ANTI'), reflexive ('REFL') and reciprocal ('REC') clauses. As an example of reflexives, compare:

yangana-ngku    kalpin- $\phi$     karpa-n      (47)  
kampa- $\phi$ -ngku.

mother-ERG    child-ABS    cover-PAST/PRES  
blanket-INST

'The mother covered a child with a bark blanket.'

	Semantic aspect			expressions	Morphosyntactic aspect			
	participants	impingement	change		case frame	passive	reflexive	reciprocal
(53)	+	+	+	+	+	+	+	+
(54)	+	+	—	+	+	+	+	+
(55)	+	—	—	+	+	+	+	+
(56)	+	—	—	+	+	—	—	+
(57)	+	+	+	+	+	+	+	+
(58)	+	+	—	+	—	+	—	+
(59)	+	—	—	+	—	+	+	+
(60)	+	—	—	+	—	—	—	—
(61)	+	—	—	+	—	—	+	+
(62)	—	—	—	—	—	—	—	—
(63)	+(?)	—	—	+	+	—	—	—
(64)	—	—	—	—	—	—	—	—

Figure 2. English—degree of transitivity.

yangana- $\phi$  karpa-li-n kampila-ngku. (48)  
 mother-ABS cover-REFL-PAST/PRES blanket-INST  
 'The mother covered herself with a bark blanket.'

As an example of reciprocals, compare:

pama-ngku kantu- $\phi$  palka-n. (49)  
 man-ERG dog-ABS kill-PAST/PRES  
 'The man killed a dog.'

pama- $\phi$  palka-wa-n. (50)  
 man-ABS kill-REC-PAST/PRES  
 'The men killed each other/one another.'

Warrungu nouns lack a number distinction, but *pama* in (50) must refer to two or more men, due to the meaning of the verb. Warrungu reflexives and reciprocals are IntrCIs rather than TransCIs; they each express one participant only (to be more precise, one group of participants in the case of reciprocals) and also they cannot contain a noun in the ergative case. Antipassives are, roughly speaking, IntrCIs which correspond to ERG-ABS TransCIs (see Tsunoda 1988). In Warrungu, when nouns are involved, this correspondence is as follows:

	agent	patient	verb
TransCIs	ERG	ABS	transitive verb
antipassives	ABS	INST, DAT or zero	transitive verb- <i>kali</i> -

Thus, compare:

pama-ngku yuri- $\phi$  watyu-n (51)  
 man-ERG kangaroo-ABS cook-PAST/PRES  
 'The man cooked a kangaroo.'

pama- $\phi$  yuri-ngku watyu-kali-n. (52)  
 man-ABS kangaroo-INST cook-ANTI-PAST/PRES  
 Roughly as above.

Verb morphology, too, is relevant. Verb roots (and also verb stems) are classified into three conjugational classes: *l* class, *y* class, and zero class. The distribution of verb roots is as follows: the *l* class contains all of transitive roots and a small number of intransitive roots, while the *y* class and the zero class each contain intransitive roots only. That is, the *l* class is predominantly transitive, while the other two classes are

entirely intransitive. Antipassives, reflexives and reciprocals are intransitive in terms of verb class membership as well; reciprocal verbs belong to the *y* class, and antipassive and reflexive verbs belong to the zero class.

### 3. Degree of Transitivity

As noted above, in a given language the properties of Proto TransCIs may be used as criteria for measuring the degree of transitivity of other clauses. This will be illustrated for English:

Brutus killed Caesar. (53)

He hit me. (54)

Jerry likes Sally. (55)

Paul resembles Nigel. (56)

Jim gave Val the book. (57)

I bumped into Charles. (58)

Di looked at Kay. (59)

She belongs to me. (60)

Bob is angry with Ann. (61)

Susan left. (62)

He died a heroic death. (63)

It is cool today. (64)

The degree of transitivity of these clauses may be shown as in Fig. 2. The criteria employed are:

(a) Semantic aspect: two or more participants; impingement of the activity on the patient; and change in the patient.

(b) Morphosyntactic aspect: linguistic expressions of the two participants; transitive case frame; possibility of passives, reflexives and reciprocals.

By definition, ProtoTransCIs, e.g., (53) and (57), possess all of these properties, and are assigned a plus sign throughout. A minus sign indicates the absence of the property concerned.

Instances such as (55) (and also (3) and (4)) are traditionally considered TransCIs. Indeed, the degree of their transitivity is high in terms of the morphosyntactic properties; they possess all of the five



relevant properties. This is despite the fact that the degree of their transitivity is low in terms of the semantic factors. This indicates that the TradConcTrans in fact implicitly (though not always) appealed to morphosyntactic criteria (see Robins 1964: 265–66; Lyons 1968: 350–51). The situation is different with instances such as (56) (and also (5)); the degree of their transitivity is low in terms of both semantic and morphosyntactic factors.

Instances such as (58) and (59) are interesting. Although they are traditionally not considered TransCls, the degree of their transitivity in terms of the morphosyntactic properties is not really low (in contrast with (60)). Obviously, the TradConcTrans ignored these criteria regarding such instances.

Instances such as (62) and (64) are traditionally considered IntrCls. Indeed, they share none of the above-listed properties. Instances like (63) are traditionally considered IntrCls with an 'object.' Such 'objects' are called 'cognate objects,' 'inner objects,' etc. (see Jespersen 1924: 137–38). Despite the existence of an 'object,' the degree of their transitivity is very low. (Semantically speaking, a 'cognate object,' e.g., *death*, is already included in the verb, e.g., *die*, and does not really refer to any participant as distinct from the verb. That is, 'cognate objects' are really 'dummy objects' (cf., the 'dummy subject' *it*), and, semantically, these clauses may be considered as one-place. Hence the question mark in the column 'participants'.)

Instances such as (61)—those with certain adjectives as the predicates—are also interesting. Although they have traditionally been considered IntrCls, the degree of their transitivity is not so low as that of (62) or (64). Note in particular that they can have related reflexives and reciprocals (though not passives). Thus, compare (61) with:

Bob is angry with himself. (65)

Bob and Ann are angry with each other. (66)

## 4. The Semantic Aspect

### 4.1 The Activity

The semantic factor listed in Sect. 2.1 regarding the activity—e.g., completed versus uncompleted; and affirmative versus negative—is irrelevant for the distinction between TransCls and IntrCls perhaps in the majority of the world's languages. Nonetheless, it is pertinent in a fair number of languages. Thus, in Georgian, TransCls have the ERG-ABS frame in the simple past (or aorist) and the ABS-DAT frame in the future:

(67)

bič'-ma	3ayl-i	mo-φ-k'l-a.
boy-ERG	dog-ABS	PREVERB-3, ACC-kill-3SG, NOM, PAST

'The boy killed the dog.'

(68)

bič'-i	3ayl-s	mo-φ-k'l'av-s.
boy-ABS	dog-DAT	PREVERB-3, ACC-kill-STEM-3SG, NOM, PRES

'The boy will kill the dog.'

(STEM, 'stem formant.') The crossreferencing person-number suffixes have, roughly speaking, the accusative pattern. Example (68) has a future meaning despite the gloss 'PRES' for the nominative suffix.

In Russian, Polish, Lithuanian, and Finnish, affirmative TransCls have the NOM-ACC frame. But, when negated, they take NOM-GENITIVE (Russian, Polish and Lithuanian) and NOM-PARTITIVE (Finnish). Examples from Russian:

(69)

Ja	našel	cvety.
1SG, NOM	find, MASC, PAST	flower, PL, ACC

'I (masculine) found (the/some) flowers.'

(70)

Ja	ne	našel	cvetov.
1SG, NOM	NEG	find, MASC, PAST	flower, PL, GEN

'I (masculine) did not find any flowers.'

### 4.2 The Patient

The affectedness/nonaffectedness of the patient is clearly reflected in the case-marking of many languages. Thus, compare the following English examples:

Di hit/kicked/shot Liz. (71)

Di hit/kicked/shot at Liz. (72)

In (71), Di's action impinged on Liz, whereas (72) merely states that Di aimed at Liz; the impingement may not have occurred.

In Djaru, Kuniyanti (Western Australia) and Walbiri (Northern Territory, Australia), certain verbs show the alternation of ERG-ABS and ERG-DAT. Examples from Djaru:

(73)

ngatyu-ngku	nga = rna = φ	ngumpirr-φ	pat-man-i.
1SG-ERG	C-1SG, NOM-3SG, ACC	woman-ABS	touching-do-PAST

'I touched the woman.'

(74)

ngatyu-ngku	nga = rna = la	ngumpirr-ku	pat-man-i.
1SG-ERG	C-1SG, NOM-3SG, DAT	woman-DAT	touching-do-PAST

'I tried to touch the woman.'

Djaru crossreference markers are enclitics, a type of clitics. They are generally attached to the carrier morpheme ('c'), whose sole function it is to carry them. Enclitics are indicated by a preceding equal sign, while suffixes are shown by a preceding hyphen.

## Transitivity

As exemplified above, if the nonaffectedness of the patient is reflected in case-marking at all, then it always involves the case of the patient. (In certain languages, the case of the agent, too, is altered, perhaps as a concomitant change; see Tsunoda 1985.)

### 4.3 The Agent

Volitionality of the agent is sometimes connected with transitivity or ProtoTransCls (e.g., Hopper and Thompson 1980; Givón 1985). However, volitionality is generally irrelevant to the distinction between TransCls and IntrCls. Thus, in English (as in many other languages), the events described by TransCls such as (53) and (54) may be either volitional or non-volitional. Similarly, the events described by IntrCls may be volitional, e.g., (62), or nonvolitional, e.g., (22).

It is important to emphasize that volitionality of the agent has no link whatsoever with the affectedness of the patient. Thus, compare an unsuccessful murder ('volitional' and 'nonaffected') and accidental homicide ('nonvolitional' and 'affected'). In manifestations of transitive case frames as well, it is almost always the affectedness rather than volitionality that is relevant. This is seen, for example, in the following English examples, concerning the manifestation of the transitive case frame, NOM-ACC:

	case frame	volitional?	affected?	
I hit him.	NOM-ACC	unspecified	yes	(75)

I hit at him.	NOM-at	yes	unspecified	(76)
---------------	--------	-----	-------------	------

Analogous remarks apply to parallel alternations in other languages, e.g., (73) and (74) of Djaru. In these alternations, the respective transitive case frames do not necessarily indicate a higher degree of volitionality. That is, volitionality is not an essential feature of TransCls (see Tsunoda 1985).

Nonetheless, volitionality may be associated with TransCls to a limited extent. Thus, in Japanese, the DAT-NOM frame is used with verbs which describe ability, possession, emotion or the like—all non-volitional by nature:

Taroo ni eigo ga wakar-u.	(77)
Taroo DAT English NOM understand-PRES/FUT	
'Taroo understands English.'	

When these verbs express attempt, intention, wish or the like (with certain morphological and other changes), they can no longer take the DAT-NOM frame. They take the transitive frame NOM-ACC (although another non-transitive frame NOM-NOM is acceptable under certain circumstances):

Taroo ga eigo o wakar-ooto	(78)
s-ita.	
Taroo NOM English ACC understand-NONFINITE	
try-PAST	
'Taroo tried to understand English.'	

A similar situation involving such verbs of 'non-volition' obtains in Bengali (Bangladesh), Russian, and Georgian. Under these limited circumstances, volitionality may be said to be associated with TransCls. (Note, however, they are not ProtoTransCls. Recall also that volitionality is generally irrelevant to TransCls.) In turn, the DAT-NOM frame may be said to indicate lack of volitionality (see Klaiman 1980).

## 5. Transitivity. Related Issues

### 5.1 Ergativity

Ergativity is a phenomenon in which the patient and the  $S_i$  are treated alike, in distinction from the agent. It is most widely attested in the area of case marking, although it may be realized in other areas of grammar, such as crossreference. For examples, see Sect. 2.2.3. Since ergativity is merely one of the ways the agent, the patient and the  $S_i$  are differentiated or not differentiated, it should not be identified with transitivity.

### 5.2 Causativity

Causative clauses may be illustrated by the following English examples:

Liz made Di cry. (79)

Ed made Ken hit Bob. (80)

Causative clauses (of English, at least) may be adequately considered ProtoTransCls; they possess all of the properties listed in Sect. 2.1. Note in particular that, in terms of the semantic aspect, the 'causer' affects the 'causee'—by causing the latter to do something.

Reciprocally, ProtoTransCls are paraphrased as causative clauses (although there are certain semantic differences between them), since they describe a change of one kind or another (see Lyons 1968: 352–54, 368), e.g.:

Ed killed Kim. (81)

Ed made Kim die. (82)

John opened the door. (83)

John made the door open. (84)

That is, ProtoTransCls may be considered causative clauses. However, this is not true of other TransCls. Instances such as (2) to (5), and (54) to (56) may not be paraphrased into causative clauses. That is, TransCls other than ProtoTransCls should be distinguished from causative clauses, and causativity should not be identified with transitivity.

## 6. Future Prospects

### 6.1 Prototypical Intransitivity

A characterization of ProtoTransCls was reasonably straightforward. However, the matter is problematic when we attempt to characterize prototypical intransitive clauses ('ProtoIntrCls'). Indeed, no such attempt

seems to have ever been made. It is not really clear what type of IntrCls are best considered ProtoIntrCls. Another problem to consider is the relationship between TransCls and IntrCls. It is usually assumed that TransCls and IntrCls share one single axis, respectively occupying its opposite ends. But is this view adequate?

Regarding the semantic aspect, for instance, IntrCls express varied meanings, such as activity, e.g., (6), change, e.g., (7), state, e.g., (8), etc. Do these meanings present different degrees of semantic intransitivity? Can any of them be singled out as the semantic property of ProtoIntrCls? Can these meanings be allocated on one single scale of Proto TransCls-to-ProtoIntrCls? And so on. These issues are extremely controversial, and it may turn out to be necessary to abandon the assumption that TransCls and IntrCls share one single axis.

There is an alternative view: unlike ProtoTransCls, ProtoIntrCls are not defined positively. (This is possibly what is intended by the term 'intransitive,' i.e., 'not transitive.')

On this view, various kinds of IntrCls surround ProtoTransCls, rather like satellites.

### 6.2 Transitivity in Linguistic Theories

Linguistic theories generally take the issue of transitivity for granted. They are mainly concerned with uncontroversial instances of TransCls and IntrCls, and neglect problematic issues such as those discussed

above. Most of the existing linguistic theories will need to be drastically revised in order to account for these issues.

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## Valency Changing Alternations

R. L. Humphreys

The valency of a predicate (verb, noun, adjective, preposition) is its potential for combining with other sentence constituents; intransitive verbs are monovalent (they take only a subject), transitive verbs are divalent (they take both a subject and an object), ditransitive verbs are trivalent (they take a subject, an object, and an indirect object). The term 'transitive' is quite restrictive: a verb is so called only if it takes a subject and object which are both noun phrases. Valency notions are more general: a divalent verb may take a prepositional phrase in object position instead of a noun phrase, e.g., the verb *result in* in *The plan resulted in disaster* is divalent (or *semantically transitive*).

Verbs (and other predicates) are not necessarily realized with the same number of constituents in all circumstances. For example, the verb *sink* can appear in sentences of the form *The boat sank*, where it

appears monovalent (or intransitive), and also in *The captain sank the boat*, where it appears divalent (or transitive). Verbs which apparently exhibit such behavior exhibit 'valency change alternation.' Change alternations are to be distinguished from valency-preserving alternations where the order and realization of valent elements is changed whilst remaining the same in number, e.g., in the valency-preserving alternation *The farmer loaded the cart with hay* versus *The farmer loaded hay into the cart*, the verb *load* apparently remains trivalent. Passivization *The farmer loaded the cart with hay* → *The cart was loaded with hay (by the farmer)* and dative shift *The farmer gave the horses hay* → *The farmer gave hay to the horses* are also considered to be valency-preserving alternations.

This article is principally concerned with identifying valency-changing alternations in English and the sorts of predicate that participate in them.

### 1. Object Alternation

A normally transitive verb exhibits object alternation when it is realized in some context without an explicit object, e.g., *Mary ate* instead of *Mary ate her dinner*. (This alternation includes cases generally known as 'object deletion'; however, there are other instances of the alternation where the notion that the object is deleted is less appropriate.)

Different types of verbs vary in their potential for object alternation in given contexts. There are strongly transitive verbs (*hit, wield, damage, dislike, discover* . . .) which are rarely (if ever) realized without their objects:

Mary discovered the cash. (1a)

\*John lost the cash and/while Mary discovered. (1b)

This requirement holds good for strongly contrastive contexts:

Did Mary find the answer? (2)

\*No, she discovered.

No, she discovered it.

However, it is usually possible to construct *some* contrastive and/or generic context in which there is no object:

Research scientists discover rather than invent. (3)

Some, otherwise strongly transitive verbs, lose their objects in collocations:

\*Mary fetched/carried (all afternoon). (4a)

Mary fetched and carried (all afternoon). (4b)

The collocation *fetch and carry* denotes an activity; it does not have its own transitive form.

A second class of transitive verbs realize without objects more freely:

Mary watched the play. (5a)

John listened to the play and/while Mary watched. (5b)

Did Mary just listen to the play? No, she watched (it). (5c)

Here it is understood that Mary watched the play that John listened to; with this and similar verbs (such as *choose, push*), the intransitive form only occurs where the reader/hearer can determine a full specification of the object from the context. Hence in a discourse, if at some point speaker A says *Mary watched*, then it is inappropriate for speaker B to then ask *What did Mary watch?* since this information is presupposed. This type of object alternation is known as 'contextual deletion' (Allerton 1976) or 'definite object deletion.' Prepositional phrases in object position (as in *John listened (to the play)*) are also contextually deletable.

Some psychological verbs may contextually delete:

A: You have a dental appointment on Monday. (6a)

B: I know/remember/understand. (6b)

Where the deleted element can be a *that* complement—as here—the process is also known as 'null complement anaphora.'

A third class of verbs (e.g., *read, eat, cook*) allows object alternation in the past tense without requiring that some specific object be understood or identified in the discourse context:

Mary read a book on plumbing. (Transitive Form) (7a)

Mary read. (Unspecified/Indefinite Object Deletion) (7b)

The use of *read* determines that some semiotic entity is being read, but this need not be specified in the context. Speaker B in a discourse can appropriately follow speaker A's statement *Mary read* with the question *What did Mary read?* since no such specific information is presupposed.

Whilst contextual deletion corresponds to the selection of a definite proform (e.g., *he, she, it*), unspecified object deletion prototypically corresponds to an indefinite (e.g., *something, someone*):

Mary read something for an hour. (8a)

Mary watched it/?something for an hour. (8b)

With *watch*, the use of the indefinite form *something* is distinctly odd in most discourse contexts.

Verbs which undergo unspecified object deletion determine affected or created objects in virtue of their meaning alone (i.e., only certain things can be read, cooked, or eaten). Since intransitive forms remain semantically transitive, it is tempting to suppose that the underlying argument structure of the verb is bound to a lexically-designated constant (e.g., a semiotic entity or food for *read* and *eat* respectively). (Think in *Mary is thinking hard* might also be considered as determining an unspecified cognitive object, i.e., what she is thinking about.)

By contrast, verbs which undergo only contextual object deletion are less restrictive (one can watch or listen to a great variety of things) hence some contextual specification is presupposed. Note, however, that there are some verbs which can undergo contextual object deletion without explicit specification of the object, where that object can be inferred from the wider context. Thus *enter* frequently appears object deleted because *the room* can be inferred—but *enter* can also object delete with *the race*, for example. The verb *enter* does not inherently specify its possible objects as restrictively as *read*.

Simple present and past forms of object-deleted intransitives have specialized interpretations (characteristic property of agent alternation):

John writes/wrote books. (9a)

John writes/wrote. (= writes/used to write texts habitually)

John drinks/drank 2 bottles of whisky every day. (9b)

John drinks/drank. (= habitually drinks/used to drink alcohol)



This interpretation can be obtained with progressives, e.g., *Mary is writing/drinking nowadays*. The deleted form also has a modal reading, e.g., *Mary writes* means Mary can, knows how to, write. (*Mary drinks* = 'can drink' is available in hospital contexts and the like.) The habitual reading obtained with unspecified object deleting verbs in this context is not so readily available for context deleting verbs. Forms like *Mary chooses/watches* mainly serve as historic presents rather than habitives, perhaps reflecting the fact that context deleters do not lexically determine their objects. However, forms like *My dog bites* do exist, meaning he habitually bites people.

A fourth class of verbs denoting (possibly) reflexive actions (e.g., *shave, wash, dress*) may be realized with or without a reflexive pronoun:

Mary dressed (herself). (10)

When not interpreted reflexively, these verbs are strongly transitive, e.g., there are few contexts in which *Mary dressed* means that she dressed someone other than herself.

A fifth class of verbs such as *run, swim, jump* are generally considered to be semantically intransitive but can be realized with a measure phrase in object position:

Mary ran/swam. (11a)

Mary ran/swam a mile. (11b)

The intransitive form denotes an activity; there is no contextual/unspecified/indefinite affected or created object. The transitive form denotes an event; it can be understood as something like *go a mile by swimming/running*.

Bodily movement verbs such as *swallow, kick* form a sixth class:

John kicked/swallowed. (12a)

John kicked/swallowed the pigeon. (12b)

The intransitive form can denote a bodily action where there is no explicit or implicit semantic object: if John swallows or kicks, it does not entail that he kicks or swallows something, rather, he exhibits kicking or swallowing motions. Given this failure, the two forms should perhaps be treated as two different (albeit historically related) verbs, rather than being true object deletion alternants.

The notion of an object alternation has been primarily discussed with respect to verbs. Studies of nominals (see Grimshaw 1990 for a summary) suggest that their arguments are not as freely omissible as has traditionally been supposed. Thus the strong transitivity of *destroy* is reflected in the syntax of its event-denoting derivative *destruction* (which has an obligatory *of*-PP corresponding to the verb object), whilst the noun *attack* seems to reflect the object-deleting properties of the verb *attack* in allowing

free omission of the *on*-PP corresponding to the verb object:

They attacked/\*destroyed. (13a)

The enemy's destruction of the city. (13b)  
The enemy's attack on the city.

The enemy's attack/\*destruction. (13c)

The possibility of developing a notion corresponding to object alternation for nouns (and perhaps adjectives) needs further investigation.

### 1.1 Deletion and Affixation

In many languages certain types of deletion are morphologically indicated. Russian suffixes *-sja* (or *-s* after vowels) onto object-deleted *nesti* 'to lay (eggs)' but not for *čitat* 'to read' in the same circumstance. Moreover, whilst object-deleted *nesti* is suffixed in both habitual and eventive predications (e.g., *The hen lays* versus *The hen has laid*), other verbs such as *kusat* 'to bite' are only affixed in habitual predications. (The *-sja/s* affix in general indicates that the verb's direct object is absent—it can be used to mark reflexives, reciprocals, anticausatives and passives.) In Dyirbal overt marking of object-deleted verbs is sufficiently regular and systematic to be known as the antipassive voice (Comrie 1985).

### 1.2 Verb Type and Object Deletion

The relationship between the transitivity of a verb class and its general semantic properties is far from clear, e.g., *eat* object deletes, but *devour* (a manner of eating) does not. However, stativity and durativity appear to be relevant.

Stative verbs (e.g., *resemble, contain, wear, like*) are likely to be strongly transitive. However, not all strong transitives are stative, e.g., *mention, inform, and wrap* denote punctuate events. Nor are all statives strongly transitive, e.g., *know* and *fit*, both of which can undergo contextual deletion:

These shoes fit (me). (14)

Context deleting verbs are likely to be process verbs, e.g., *concentrate, follow, look at, pull, watch*. Notice is an exception.

The transitive forms of unspecified-object deleting verbs leave open the question of whether the denoted activity is culminated or not, e.g., given only *Mary hoed the garden*, whether or not she actually finished the job remains unknown. Object deletion here is prototypically used to pick out the process/activity component (*eating, hoeing*, etc). This observation is consistent with the fact that complete particles block object deletion (Mittwoch 1971):

Mary hoed (up) the garden. (Completive *up*) (15a)

Mary hoed. (Unspecified Object Deletion) (15b)

\*Mary hoed up. (15c)

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Compleitive predications prototypically focus attention on the change of state associated with the culmination of an event, e.g., the fact that the garden is now in a hoed state.

### 2. Causative–Anticausative

Certain verbs, usually termed ‘ergatives,’ have both transitive and intransitive forms where the subject of the intransitive reappears as the object of the transitive:

The captain sank/burnt the boat. (16a)  
(Transitive: Causative)

The boat sank/burnt. (Intransitive: Anticausative) (16b)

Prototypically, the agent denoted by the subject of the transitive form is an agent who brings about the object’s change of state or location—hence the terms ‘causative’ and ‘anticausative’ (or ‘inchoative’ or ‘noncausative’) for transitive and intransitive respectively.

There is another closely related alternation:

The grand old duke marched 10,000 men up the hill. (17a)

10,000 men marched up the hill. (17b)

The object in the transitive form has an agentive status that is lacking from e.g., the object of *burn* in the preceding example. Causatives of the *march*, *walk*, *gallop*, etc. type are often called ‘double agentives.’

Some characteristics of ergative pairs:

(a) The transitive and intransitive forms are not normally morphologically distinguished in English. A few semantically and historically related verb pairs are morphologically distinguished and realize the alternation:

The lumberjack is felling the trees. (*fell*) (18a)

The trees are falling. (*fall*) (18b)

Similarly, *raise/rise*, *lay/lie*, *set/sit*.

In Romance languages the anticausative form may be marked with an ergative clitic, morphologically identical to the reflexive:

FR: Marie brisera le verre. (19a)  
Le verre se brisera.

IT: Giovanni rompe il vetro. (19b)  
Il vetro si rompe.

It seems difficult to predict for which pairs the clitic intransitive form might be expected (Burzio 1986: 75); some verbs such as Italian *indurire* ‘harden’ have both *indurire* and *indurirsi* as anticausative counterparts.

A cross-linguistic study by Nedjalkov and Sil’nitsky (cited in B. Levin 1985: 20) indicates that the most common morphological device derives the non-causative member from the causative member of the pair. (For a general cross-linguistic account of causativization, see

Comrie 1985. For an analysis of causatives and middles in Berber, Warlpiri, and Winnebago, see Guerssel, et al. 1985.)

(b) Ergative alternants denote events (rather than states of affairs or atelic processes). Hence they appear with punctual (e.g., *just*) or terminative (e.g., *in 5 minutes*) adverbials and in progressive aspect:

The captain has just sunk the boat. (20a)  
The boat just sank.

The captain sank the boat in 5 minutes. (20b)  
The boat sank in 5 minutes.

The captain is sinking the boat. (20c)  
The boat is sinking.

This eventivity distinguishes the intransitive form from the ‘middle’ construction, although it would appear that all ergative verbs which form anticausatives can also form middles.

(c) In contrast to the ‘middle’ construction, adverbial modification of the anticausative is freely omissible:

The boat sank (easily). (21)

(d) In contrast to the ‘passive’ construction, subject-oriented adverbs are excluded from most ergatives and agentive *by*-phrases from all of them:

\*This vase broke clumsily/deliberately. (22a)

This vase was broken clumsily/deliberately. (22b)  
(Passive)

\*This vase broke by John. (22c)

This vase was broken by John. (Passive) (22d)

(e) Although the causative form readily accepts instrumental adjuncts, the anticausative does not:

The captain sank the boat with an explosive device. (23a)

\*The boat sank with an explosive device. (23b)

This constraint presumably follows from the absence of an agent.

(f) Unlike the passive, ergatives (and middles) do not accept rationale clauses:

The captain sank the boat to get the insurance money. (24a)

The boat was sunk to get the insurance money. (24b)

\*The boat sank to get the insurance money. (24c)

The ‘agentless’ passive (b), but not the anticausative, seem to have a hidden agent argument which can license the rationale adjunct. This may be taken as evidence that the agent role in anticausatives is not represented at any level of grammatical structure.

- (g) Both alternants accept resultative secondary predication:

John froze the sorbet solid. (25a)

The sorbet froze solid. (25b)

Unergative intransitives do not accept resultatives:

\*Mary walked tired.

(i.e., Mary made herself tired by walking) (26)

### 3. Interpretation and Verb Type

Ergative verbs denote two particular subclasses of events: changes of state (e.g., *cook*, *liquefy*, *melt*, *freeze*, *break*) and changes of location (e.g., *drop*, *spill*, *slide*). Some ergatives denote changes which are arguably state and/or location, e.g., *open*, *twist*. In terms of Gruber's thematic roles, the transitive form has agent and theme roles and the intransitive (apparently) theme only. A change of state or location entails that the theme is affected, and hence atelic verbs (*follow*, *avoid*, *push*) and verbs of mere contact such as *hit* do not participate in the alternation. Nor, however, do all theme-affecting verbs, e.g., *cut*, *crush*.

As Levin (1985) notes, some languages exhibit causative/anticausative forms involving predicates outside the change of location/state classes and employ the morphological device used with more familiar examples of the alternation. The same predicates—*eat/feed*, *see/show*, *learn/teach*—are generally involved in each such language (note that English uses suppletive forms here).

The availability of both alternants in a language is not readily predictable. Whilst *float* and *drop* exhibit both, *drift* and *fall* are only intransitive, while *propel* and *throw*—both varieties of 'causing to move'—are only transitive. English *grow* has both forms, whilst its Italian translation *crescere* is intransitive only.

Is an ergative pair formed from the causative or anticausative? Native speakers tend to think that those verbs which only occasionally involve a causer/agent are basically intransitive (e.g., *bleed*, *burn*, *burst*, *melt*), whilst those which generally involve a cause are basically transitive (e.g., *break*, *drop*, *extend*, *spill*; Dixon 1991). The latter group includes most change of location ergatives. Change of state/locations which necessarily involve a causer/agent will form middles.

#### 3.1 Treatment in Grammatical Theory

Since the 1980s, syntactically distinguishable subclasses of intransitive verbs have been identified—unaccusatives and unergatives. The former, which include *arrive*, *descend*, have surface subjects which are hypothesized to be the result of movement from object position in deep structure (DS). The surface subjects of unergatives (which includes, e.g., *bark*, *bloom*, *jump*, *walk*) have not undergone any such

movement (Burzio 1986). It is further supposed that the anticausatives of ergative pairs have essentially the same movement analysis as unaccusative intransitives which lack a transitive counterpart, i.e., just as with *arrive*, the deep object of *sink*, say, is moved to subject position following absorption of the deep subject thematic role and suppression of case marking.

In languages like Italian, the movement analysis is justified by appeal to the object-like behavior of unaccusative/anticausative subjects, e.g., object-like *Neccliticization of molti* in *Ne arrivano molti* 'Many of them arrived.' In English, the analysis has relevance in predicting object-hosted resultative secondary predication:

We froze the sorbet solid. (Causative) (27a)

The sorbet froze solid. (Anticausative) (27b)

The sorbet arrived frozen. (Unaccusative) (27c)

\*The dog barked hoarse. (Unergative) (27d)

On the movement analysis, this pattern reflects a generalization: resultatives are only predicated on (deep) objects. Whilst a semantic account of the generalization seems possible—themes allow resultative predication—proponents of the movement analysis also point out that resultatives predicate on nonthematic objects to unergatives (e.g., *The dog barked itself hoarse*; Rappaport and Levin 1991). In lexical-functional grammar (which eschews any distinction between deep and surface grammatical function) the notion of a deep object is in effect reanalyzed as an argument which is thematically unrestricted—a property shared by both (surface) subjects and objects (Bresnan and Zaenen 1990).

The movement analysis cannot apply uniformly to all causative pairs: the anticausative in *march*-type pairs is clearly an unergative, and not an unaccusative.

### 4. Middles

The middle form (or medio-passive, or pseudo-intransitive, or patient-subject construction) is considered to be intermediate between the active and passive forms of a transitive verb:

John washed this jumper well. (Active) (28a)

This jumper was washed well by John. (Passive) (28b)

This jumper washes well. (Middle) (28c)

The object of the active form is 'promoted' to subject of the middle; the subject of the active disappears. The same description holds for anticausatives, although a number of other features distinguish these two constructions. Promotions to subject from nonobject functions, as found in the instrumental alternation, are not normally considered as middles:

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Mary cuts the bread with a knife. (Active)	(29a)	This jumper (has) washed well.	(35a)
The knife cuts the bread (easily/well). (Active—Instrumental Subject)	(29b)	This politician (has) bribed easily (e.g., in the past).	(35b)
The bread cuts (easily/well). (Middle)	(29c)	(g) Nonergative middles permit instrumental adjuncts:	

### Characteristics of the middle:

- (a) Middle and active verb forms are not morphologically distinguished in English.  
(b) Agentive *by*-phrases are excluded:

These books are easily read (by children). (30a)  
(Passive)

These books read easily (\*by children). (Middle) (30b)

As with ergatives, agent-centered adverbs are excluded:

This fabric washes clumsily. (31a)

\*This chair folds deliberately. (31b)

In this sense, middles are agent neutral (Felbaum 1985): the manner of action specified by the middle is determined by properties of its subject which permit its performance by any agent.

- (c) Unlike passives, middles do not permit rationale clauses:

This bureaucrat was bribed to avoid the draft. (32a)

\*This bureaucrat bribes (easily) to avoid the draft. (32b)

- (d) Middle forms appear in prototypical contexts:

This fabric washes like wool. (Comparative) (33a)

Some fabrics won't/will/do wash. (33b)  
(Negative/modal/emphatic)

This fabric washes well/easily. (Adverbial) (33c)

Whilst it is sometimes claimed that middles must occur with adverbs (when not in explicit comparative or negative constructions), semantic and pragmatic factors intervene. For example, it can perfectly well be asserted contrastively that *This fabric washes* or *Local politicians bribe* (= accept bribes). On the other hand, it is distinctly odd to say *This book reads* rather than *This book reads well*—presumably because for texts readability is an inherent property, whilst for fabrics washability is not.

- (e) Whilst all ergatives can have progressive forms, this is generally excluded in middles without a modifier:

The boat is sinking. (Anticausative) (34a)

This book is reading \*(well). (34b)  
(Middle—Progressive)

- (f) Although middles are prototypically expressed as present simples, past forms are not excluded:

The furniture assembles (easily) with ordinary household tools. (36)

### 4.1 Interpretation of Middles

Although it is formed from telic predicates, the middle itself is noneventive: it constitutes a generalization about an inherent property of its subject. To say that *This fabric washes easily* is to say something like *This fabric is easily washable* or *This fabric is easy to wash* or *People in general can wash this fabric easily*. It has an inherent property such that one can cause it to become clean easily by washing ('washes easily'), or such that the result of causing it to get wet is satisfactory ('washes well'). Clearly, the relationship between property-denoting adjectives in *-able* and the middle is very close; however, the adverbial modification of the latter allows a fuller statement of the grounds for something's being washable, foldable, stackable, or whatever.

The genericness of middles lies primarily in the fact that the agent group—*people in general*—is not specified, nor are there syntactic resources (such as an agentive *by*-phrase) for doing so. Whether or not the NP subject of a middle has to have a generic reading is determined by the meaning of the verb itself. With *eat*, *drink*, *kill*, for example, the subject must be generic: *This cake in This cake eats well* must be understood as *This type of cake*. For other verbs denoting resettable actions (e.g., *wash*, *clean*, *fold*), the subject can be specific: *This jumper in This jumper washes well* can denote a specific individual or a type, since the same article may be washed many times.

### 4.2 Verb Types

Middles can be formed from verbs with affected objects, i.e., objects which undergo a change in state (mental/physical) or location. The class of verbs so characterized includes all the ergatives; moreover, all ergative verbs form middles:

Mary broke the glass vase. (Causative) (37a)

The glass vase broke. (Anticausative) (37b)

Glass vases break easily. (Middle) (37c)

Verbs which do not have affected objects do not form middles (nor are they ergatives):

Mary avoids/follows/rescues the police. (38a)

\*The police avoid/follow/rescue easily. (38b)

Similarly the relative acceptability of *John persuades/convinces easily* compared to *\*John asks easily* is attributable to the fact that persuading someone (to



do something) entails changing their mind whereas asking them (to do something) may not.

(Whilst the semantic relationship between adjectives in *-able* and middles is close, sources for the adjectives appear to be less restricted:

The police are (easily) avoidable/rescuable. (39)

Presumably these adjectives can denote both accidental and essential properties.)

Affectedness accounts for the following contrasts:

British tennis players are easily beaten. (40a)

\*British tennis players beat (easily). (40b)

This carpet is easily beaten. (40c)

\*This carpet beats easily. (40d)

This carpet is easily beaten clean. (40e)

This carpet beats clean (easily). (40f)

When one beats someone at tennis, that person does not necessarily undergo a change of state or location. The same is true for *beat* understood as a contact verb, i.e., *hit*. However, addition of the resultative secondary predicate *clean* forces a change of state interpretation and hence permits middle formation. Prepositional resultatives function similarly:

\*This door kicks easily. (41a)

This door kicks in easily. (41b)

However, some problems remain. A text which has been read has not obviously thereby undergone a change of state, yet the middle form of *read* is completely acceptable, e.g., *This book reads well*. On the other hand, *This play watches well* is not said. Perhaps reading a text is thought akin to reading it off, making some sort of mental copy of it, and hence causing a change in location. *Photograph* and *paint* (portraits), which also involve a copying process, form middles as well.

A further puzzle is the asymmetry between *sell*, which forms middles, and *buy*, which does not. This is not a matter of mere lexical idiosyncrasy, since all commercial transaction verbs which denote variants of buying or selling pattern as *buy* or *sell* respectively:

This type of book sells/auctions/\*buys/\*purchases well. (42a)

This type of room rents well (= can be rented to people). (42b)

\*This type of room rents well (= can be rented from people). (42c)

The asymmetry seems to carry through to transactions without a financial countertransfer:

This type of book lends/\*borrows well. (43)

Presumably goods have certain properties which make it easy to sell them to people; on the other hand, whether or not it is easy for people to buy goods

depends on the marketplace rather than the properties of the goods themselves. Hence whilst the adjective *salable* means 'having properties making something suitable for sale,' *purchasable* means simply 'can be purchased.'

Appeal to properties cannot explain a further asymmetry: *This type of book sells/\*buys for under 20 dollars*. However, *sell* here is used in the particular sense of *offer for sale*; the statement is true even if no such less-than-20-dollar book has ever actually been bought. The verb *buy* has no related sense or sense component.

Whilst all ergatives form middles, not all middle forming verbs are ergatives:

Verb class	Examples	Ergative	Middle
Contact	<i>hit, strike</i>	no	no
Change of physical state	<i>melt, freeze</i>	yes	yes
Change of mental state	<i>shock, frighten</i>	no	yes
Cutting	<i>cut, slice</i>	no	yes

Some operations which appear to transitive verbs cannot serve as input for middle formation:

The dog barked. (Intransitive) (44a)

The dog barked the neighbors awake. (Dummy transitivity) (44b)

\*The neighbors bark awake easily/well. (Middle) (44c)

However, it has already been noted that certain intransitive verbs (e.g., *run, walk, jump, march*) have causative counterparts—which do form middles:

The horse jumped. (Intransitive) (45a)

The jockey jumped the horse. (Causative) (45b)

The horse jumps easily / well. (Middle = One can make this horse jump or run well) (45c)

Constructions like (45c) count as middles only if the subject is not the true instigator of the action, i.e., if it is a causee; thus *John runs well* is normally read as an active intransitive. Note that whilst (45b) can be read as *The jockey caused the horse to jump*, the sentence *The dog barked the neighbors awake* does not have the corresponding reading.

#### 4.3 Nominalization

Certain nonagentive nominals in *-er* appear to be semantically related to middles:

These gems polish/sell well. (46a)

These gems are good polishers/sellers. (46b)

These ovens clean easily. (46c)

These ovens are easy cleaners (= cleanable). (46d)

Essex rabbits don't scare too easily. (46e)

Essex rabbits are not easy scarers (= not scareable). (46f)

## Valency Changing Alternations

The car handles nicely. (46g)

The car is a nice handler. (46h)

As with the verb form, agentive *by* is also excluded:

\*These gems are good polishers by experts. (47)

However, the relationship between the verb and noun forms is not always straightforward:

These books are heavy waiters (48a)  
(= there is a heavy waiting list for these books).

\*These books wait heavily. (48b)

Moreover, it appears that not only change of state/location predicates form nonagentive nouns in *-er*:

This car is a dumper (= suitable for dumping). (49a)

\*This car dumps easily/well. (49b)

This cushion is a kneeler (= something for kneeling on). (49c)

\*This cushion kneels easily/well. (49d)

### 4.4 Treatment of Middles in Grammatical Theory

Keyser and Roeper (1984) argued that the middle form is derived by syntactic move *a*. The operation is broadly as proposed for passives in the government-binding framework: the DS subject thematic role is absorbed, objective case assignment suppressed, and DS object moves to surface subject position to prevent case filter violation. By contrast, anticausatives are derived by a lexical movement rule which allows them to undergo further operations requiring intransitive input (which middles cannot). Fagan (1988) reinterprets Keyser and Roeper's evidence for the transitivity of the middle, arguing that both middles and ergatives are lexically derived; for example, whilst passives—syntactically derived—allow preposition stranding, middles do not.

A key question concerns the status of the thematic role corresponding to deep subject in middles; it is clearly not expressible by syntactic means. Fagan (1988) proposes that it is lexically bound to a [+human, +generic] constant—*arb*—and that this saturation precludes any syntactic realization. The introduction of *arb* accords with the informal reading of, e.g., *This text translates easily* with 'People can translate this text easily.' However, *arb* is less attractive with (the rather less generic) progressive forms, e.g., *This text is translating easily*.

Middle formation has been investigated at the level of lexical conceptual structure (LCS) (Guerssel, et al. 1985; Hale and Keyser cited in Rapoport 1990). A middle is assigned a 'transitive' LCS where the change denoted by the verb semantics is subordinated to a 'cause' operator:

LCS for middles: [x CAUSE [y undergo change]].

Note that an agent slot (x) is still present in LCS even though it is not syntactically realized. Rapoport

(1990) claims that secondary predication on objects (depictives) also presupposes a transitive LCS, and hence any verb that allows a middle can head a depictive:

Mary photographed John<sub>i</sub> naked<sub>j</sub>. (Depictive) (50a)

John photographs well. (50b)

## 5. Other Valency Changing Alternations

### 5.1 Out Prefixation

Intransitives can transitive by *out* prefixation (Bresnan 1982):

\*Mary runs John. (51a)

Mary outruns John. (51b)

Anticausatives which are perceived to be fundamentally intransitive participate:

\*My ball bounces yours. (52a)

My ball outbounces yours. (52b)

\*My anchor outdrops yours. (52c)

So also unspecified object deleting verbs:

John outdrinks/outeats/outfights/outplays everyone. (53)

### 5.2 Cognate Objects

Unergative intransitives can take object-position NPs headed by event or state nominalizations of the verb:

John slept a blissful sleep/? a little nap. (54a)

Mary lived an uneventful life. (54b)

These forms are not readily passivizable:

\*A blissful sleep was slept by John. (55a)

\*An uneventful life was lived by Mary. (55b)

Unlike the nonreferring NPs in idioms (e.g., *the bucket* in *Mary kicked the bucket*), cognate objects undergo *wh*-movement:

What sort of life did John live. (56a)

What a life John lead. (56b)

\*What sort of bucket did John kick. (56c)

\*What a bucket John kicked. (56d)

Jones (1988) argues that these cognate NPs are adjuncts (compare *an uneventful life* to the adverb *uneventfully*) and that they are neither assigned case nor thematic role by the verb. Note, however, that an explanation in virtue of case assignment alone would be unsatisfactory since unaccusatives, assumed to lack case assigning properties, exclude cognates (Rappaport and Levin 1991):

\*The glass broke a jagged break. (57)

In addition to genuine cognates, there are constructions of the following sort:

John sang a song/three motets/  
everything Schubert wrote/the soprano's part. (58a)

Mary danced a dance/a jig/  
something rather complicated. (58b)

Here the postverbal NP is not restricted to a verb nominalization. It is also passivizable in some degree:

The part was sung by an incompetent. (59a)

The waltz had been danced by everyone. (59b)

Such behavior suggests a verb like *sing* should be analyzed like *eat*, i.e., a transitive verb which freely undergoes unspecified object deletion. However, *sing*, *dance*, and *dream* pattern as intransitives when used as eventive adjectival participles (Lees 1960):

\*the eating/cooking/reading woman (60a)

the dancing/singing/dreaming/jumping/  
sleeping woman (60b)

### 5.3 Fake Reflexives and Nonsubcategorized NPs

Some intransitive verbs can transitive via 'fake reflexives' (Simpson 1983) or nonsubcategorized NPs:

The dog barked itself hoarse. (Fake Reflexive) (61a)

The dog barked Mr Contreras awake. (61b)  
(Nonsubcategorized NP)

These forms differ from true transitives and reflexives in that the secondary predicate is obligatory:

The barber shaved himself (smooth). (62a)  
(Genuine reflexive)

The barber shouted himself \*(hoarse). (62b)  
(Fake reflexive)

The dog barked Mr Contreras \*(awake). (62c)  
(Nonsubcategorized NP)

The intransitive alternants of indefinite object deleting verbs (*cook*, *eat*, *drink*) can transitive in both ways:

She drank herself \*(into a stupor). (63a)

She drank the house \*(dry) (63b)

Rappaport and Levin (1991) have argued that unaccusative verbs cannot transitive with either of these constructions since—according to Burzio's generalization (Burzio 1986)—unaccusative verbs cannot assign case and hence extra reflexives or nonsubcategorized NPs in DS will be in violation of the case filter:

\*The bread burned the toaster black (64)  
(= By burning, the bread turned the toaster black).

However, we can have:

The fire burnt itself \*(out). (65)

though, given the agentive status of *fire*, the reflexive looks real here. The fact that it cannot appear independently is presumably the result of a semantic constraint (fires cannot burn themselves).

There appear to be restrictions on the choice of the resultative secondary predicate:

We ran ourselves ragged/\*tired/\*exhausted. (66)

### 5.4 Malefactive

Intransitives (both unaccusative and unergative) and inchoatives (*go* + predicative adjective) can undergo a variety of semantic transitivization by the addition of a pronominal—and only a pronominal—in a PP headed by *on*:

Your car broke down on me/you/us/them/  
\*my wife. (67a)

My patient died on me. (67b)

My horse fell on me. (67c)  
(e.g., as said by someone betting on it at a race)

My colleague went sick on me. (67d)

The individual(s) denoted by the pronoun are in some sense the victims of the inconvenient event denoted by the verb—hence we might call these constructions 'malefactive'.

Transitive verbs with contextually deleted objects are excluded:

My husband \*walked out/\*ran out/divorced/  
left me. (68a)

My husband walked out/ran out/\*divorced/  
\*left on me. (68b)

Some eventive transitives—particularly with a terminative or completive sense—participate:

My bank called in my loan/bounced my cheques  
on me. (69)

Surface transitives with nonreferential objects, such as certain types of idiom, also participate (presumably in virtue of their underlying intransitivity):

He kicked the bucket/spilled the beans on me. (70a)

The bloody thing has ground to a halt on me. (70b)

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## Verbs and Verb Phrases

I. Crookston

A sentence is more than a strip of words gummed together: it is a structure, in which the words are grouped into units, subunits, etc. Central to the syntax of a particular verb are its 'complements,' units associated with that particular verb rather than with verbs in general. Verbs may have complements from a variety of word classes, which may be straightforward or idiomatic in their meaning. Where there is more than one complement, they are usually restricted as to their order of appearance; and particular consideration of combinations of a noun phrase complement with an infinitive clause complement leads to extra distinctions being made. Syntactic units known as 'verb phrase' and 'V-bar' may be identified which contain the verb and other elements, but exclude the subject and so are smaller than the sentence.

### 1. Verb Complements

Intuitively, a verb's complements are those dependents it has by virtue of being the particular verb it is, while its other dependents may be associated with any verb subject to making sense. Complements must thus be specified with the individual verb in the native speaker's knowledge of the language, as well as in externalizations of that knowledge such as dictionaries and linguistic theories, while other dependents may be left to general statements about what may go with verbs. Thus we make lexical statements such as 'Use has a noun phrase complement' (for example, *a hammer* in *I used a hammer*) and general ones such as 'Verbs may have adverbs of manner as modifiers' (for example, *slowly* in *He approached the bomb slowly*).

It follows that the subject is not a complement,

since its presence or absence does not depend on the individual verb. In finite clauses, all verbs must have a subject, even where this carries no meaning whatever:

It seems that the meeting has started. (1)

The presence or absence of a subject in other constructions such as the infinitive and the imperative is also regulated by the construction type rather than the individual verb.

It also follows that any obligatory dependent other than the subject is a complement. Since there are verbs which can appear with no dependent other than the subject:

An hour elapsed. (2)

in those cases where some other dependent is obligatory, that obligatoriness must be specified in a lexical statement about the particular verb, and such statements specify complements rather than any other type of dependent. Obligatory complements are a useful diagnostic for discovering what types of complement there are, but not many complements are obligatory: compare the differing effects of omitting the noun phrase complement in:

\*John used.  
John watched.  
John read. (3)

The complement of *use* cannot be omitted, that of *watch* only when it is clear from the context what is watched, that of *read* quite freely. Since noncomplements can also be omitted quite freely, some other criterion than obligatoriness is necessary for deciding what is a complement.



The *do so* test will be relied upon here. Some items can occur in construction with *do so*, for example, most time phrases:

- I painted this room in a day, whereas a professional would *do so in an hour*. (4)

and these are not complements. Complements cannot occur in construction with *do so*, for example *a copper mallet* in:

- \*I used a hammer, whereas a professional would *do so a copper mallet*. (5)

In general, the results of this test fit well with the intuition that what should be called complements are dependents idiosyncratic to particular verbs. Direct objects as with *use*, adjective phrases describing the subject (cf. example 11 below), and prepositional phrases with 'prepositional verbs' (see Sect. 3), and other dependents which are intuitively lexical are identified as complements by the *do so* test. On the other hand, time phrases as in (4) are identified as modifiers, as are those locatives which denote a setting for the whole event, for example:

- I did the job in my garden shed, whereas a professional would *do so in a well-equipped workshop*. (6)

(For other types of locative cf. the discussion of (9) below.) Similarly with instrumentals as in:

- I did the job with a hammer, whereas a professional would *do so with a copper mallet*. (7)

Benefactives in *for*, infinitives of purpose, most examples of deadjectival adverbs, and many other units which intuitively are not lexically specified complements emerge happily as noncomplements:

- John washes cars for a living, whereas I only *do so for charity/occasionally/* to raise funds for charity. (8)

In the middle are some cases where the acceptability of *do so* sentences is unclear, some of which will be mentioned in the course of discussion.

The fit between the test results and linguistic hunches is perhaps more questionable with verbs of motion, where every source, goal, and path phrase seems to be a complement by the *do so* test, even though such phrases occur with every verb with which they would make sense. For example:

- \*I went to Cambridge, but John did *so to some place in Scotland*. (9)  
 \*I went from Cambridge, but John did *so from some place in Scotland*.  
 \*I went through Cambridge, but John did *so through some place in Scotland*.

Such phrases will be treated as complements.

Complements are often referred to as being 'subcategorized' by the verb or satisfying its 'subcategorization frame.' The origin of this terminology is that having a particular set of complements, for example, a

noun phrase followed by a preposition phrase, was said to locate the individual verb in a 'subcategory' of the category comprising all verbs.

## 2. Word Classes of Verb Complements

Verb complements may be of the category noun phrase:

- John killed [the fly]. (10)

Verbs where this is the sole complement form the core of the traditional class of 'transitive' verb, and where there is only one NP complement it is traditionally known as the 'direct object.' However, various small classes of verb take a noun phrase complement which cannot appear as subject in the corresponding passive: compare *The trousers will fit John* and *The trousers measure 34 inches* with \**John will be fitted by the trousers* and \**34 inches are measured by the trousers*. Such noun phrase complements would not always be termed direct objects.

Complements may be adjective phrases:

- John remained [very calm]. (11)

With a large subset of such verbs, a noun phrase is also possible:

- John remained [a fool]. (12)

This type of NP complement is obviously very different in semantic force from the direct object of verbs which do not take an AP, and forms a separate class from it. In *John hates the fool* there are two participants, John and the fool, whereas in *John became a fool*, there is only one, John, about which the NP complement adds information. With another subset of such verbs, a prepositional phrase is possible with a similar semantic force of adding information about the subject:

- John remained [in London]. (13)

Other verbs may take a PP complement:

- The program resides [in the main computer memory]. (14)

Restricting attention for a moment to cases where PP makes an ordinary compositional contribution to the meaning, these verbs allow freely either the transitive or the intransitive preposition:

- Wellingtons don't belong [in the house]. (15)  
 Wellingtons don't belong [inside].

or, subject to making sense, the clause-taking preposition:

- The wedding vows belong [after the Vicar has said his piece about just cause or impediment]. (16)

A few verbs take adverb phrase complements:

- The refugees fared [dismally]. (17)

Verbs may take clausal complements. The following pattern:

## Verbs and Verb Phrases

- John arranged [that a bus would be there]. (18)  
 John arranged [for a bus to be there].  
 John arranged [to be there].

is in some sense the basic one, in that this is the range of forms a clause may take in subject position where it is outside the influence of specific verbs. Some verbs, however, such as *try*, restrict the clause to subjectless infinitives, others, such as *predict*, to finite clauses, etc. A further pattern which is not possible in subject position is:

- We all believed [John to be there]. (19)

which will be discussed further below in distinguishing it from combinations of NP complement and clause complement. There is also a further 'subjunctive' type:

- They proposed that the meeting be adjourned. (20)

for which a finite clause with *should* can always be substituted.

Other verbs may have an indirect question as complement, an example being *inquire*:

- John has inquired [how much the journey costs] (21)  
 whether there is a buffet car].

Frequently the infinitive and finite indirect question are equally possible, as with *ask*.

There is a loose cluster of verbs which take 'bare' infinitive, and passive and present participle clauses:

- The sergeant had us march twenty miles. (22)  
 The sergeant had us marching in a circle.  
 The sergeant had us court-martialed.

The clustering is loose because few verbs take all three patterns. Those that enter into this pattern or part of it are causative verbs like *have* above or perception verbs like *see*. The claim that this is a cluster rather than three separate complement types is reinforced by the fact that where all three occur, the clausal complements are semantically related in the same way that an ordinary 'basic' sentence, progressive sentence, and passive sentence are related.

An *-ing* clause or 'gerund' can occur anywhere a noun phrase can occur, and vice versa. As with all syntactic claims, there is a number of exceptions to this, but it seems particularly tiny in this case. Dictionary and reference-grammar claims that certain verbs 'take an *-ing* clause' must thus be interpreted as meaning that they typically or commonly appear in such a construction rather than that these are the only verbs which do so. Thus an example such as:

- John used [being ill]/[his wife('s) being ill] as an (23)  
 excuse for not going to the meeting.

is not to be taken as evidence that *use* takes a gerund complement, rather as evidence that it takes an NP. The gerund is therefore an interesting phenomenon: most phrasal units have an identifiable 'head' that is

the same class as themselves, for example, most (if not all) prepositional phrases have a preposition head: the gerund is clearly a noun phrase but equally clearly its head, if there is one at all, is a verb.

### 3. Idiomaticity and Complements

A syntactic unit is 'idiomatic' where its meaning is not a normal combination of the meanings of its parts. The opposite of idiomatic is 'compositional.' Idioms which include a verb and its subject (in active voice) are rare, and this is another reason for regarding subjects as apart from complements.

There are a few clear cases of verb-adjective-phrase idioms such as *break even*. A much larger class of verbal idiom has noun phrase complements:

- The tractor (turned [turtle]). (24)  
 The competition (took) [great (umbrage)].  
 This should (spike) [the competition's (guns)].

(Complements in these examples are enclosed in square brackets, and parts of an idiom are enclosed in round brackets.) The typical verbal idiom is like those above, in that a verb, plus the head of its complement, carries a meaning not made up from the meanings of the two parts. For example, *guns* above is the head noun of the noun phrase complement *the competition's guns*; while *turtle* is the head of the single-word phrase *turtle*, etc.

The meaning of *spike ... guns* is clearly not a normal combination of the meanings of *spike* and *guns*. The meaning of *take umbrage* is not a normal combination of *take* and *umbrage*, for *umbrage* only occurs in this construction and thus has no meaning as a separate word. Of the idiomatic elements discussed below, *rely* is similar to *umbrage* in this respect, never occurring without its *on*; as are *perjure* and *rabbit* (as a verb).

Special types of verb-NP idiom have pronominal and reflexive NPs:

- John surprisingly (made [it]) with some time to spare. (25)  
 Tradition (has [it]) that Alfred burnt some cakes.  
 The witness has clearly (perjured [himself]).

Possibly an even larger class of idiom is that composed of verbs with PP complements, especially where the head preposition of the PP is the sole noncompositional item other than the verb. Thus there are large numbers of idioms of the following type:

- We (rely) [(on) this computer]. (26)  
 John (looks) [(after) his tools].

Such constructions clearly meet the criteria for an idiom in that the meaning, for example, of *look after* is not compositionally determined by those of *look* and *after*; and in that the element in the complement which does not contribute compositionally is the head of the complement. The traditional failure to term such constructions idioms seems unfounded.

The *look* after type of case would traditionally be called a 'prepositional verb': identical considerations apply to the following type:

- The computer (broke [down]). (27)  
Nobody (turned [up]).

The constructions are noncompositional, and the noncompositional part of the complement is the head: like *turtle* in *turn turtle*, *down* and *up* are the heads of one-word phrases. One established term for this construct is 'particle verb'; it is sometimes also what is meant by 'phrasal verb.'

In general, unlike with the compositional PP complements, it is specified whether the transitive or the intransitive preposition is involved: thus *rely on* has transitive *on*, but in:

- The two linguists (rabbed [on]) about click sounds. (28)

intransitive *on* is required. Perhaps the only candidate to be described as a clause-taking preposition in an idiom is the *if* in constructions like:

- I'd (prefer) ([it]) ((if) you didn't do that). (29)

#### 4. Combinations of Complements

Verbs of motion by the definition used here can have four complements: a thing moved, a source phrase, a goal phrase, and a path phrase. *Bet* has three:

- John bet [Bill] [a small amount] [that there would be a general election that year]. (30)

It is often felt that verbs denoting commercial transactions such as *pay*, *buy*, *sell*, etc., have four complements: a thing exchanged, a buyer, a seller, and a price. The result of the *do so* test is unclear with some of these units, for example, the price unit with *buy*:

- ?John bought a snack for five zlotys but Bill did so for four. (31)

Combinations of two complements are common, and span most of the possible combinations of word classes, even down to PP and adverb phrase or 'particle' (that is, intransitive preposition making a non-compositional contribution to meaning) and clause:

- They went [about this task] [very watchfully]. (32)  
John found [out] [that the meeting was off].

though perhaps no verb has two clauses. Some common combinations are examined below.

##### 4.1 Noun Phrase Plus Noun Phrase

In this pattern, the first noun phrase generally is optional and most often has the semantic force of some kind of beneficiary. Where both noun phrases have to be there, as with *hand*, or where the semantics of the first is not benefactive, as with *begrudge*, *cost*, etc., the first noun phrase is clearly a complement, because only certain individual verbs have the pattern in these forms.

Elsewhere, dictionaries will list those verbs such as *give* and *send* which commonly appear in this pattern, but it is in fact extremely widespread:

- The workmen dug [John] [a hole]. (33)  
John shot [the squire] [a rabbit].

Moreover, the restrictions on it appear not to be lexical: the beneficiary noun phrase can be added to any verb which has another noun phrase complement subject to making sense. Thus there are pairs like:

- (a) I cut John some flowers. (34)  
(b) \*I cut John his lawn.

where 34(b) is unacceptable because John is not the right kind of beneficiary given the situation described. (It seems that the beneficiary must be someone who is coming into ownership of the referent of the direct object as a result of the action described, at least as a first approximation.) The benefactive certainly appears to be a complement inasmuch that the *do so* test identifies it as such: \**I cut John some flowers while you were doing so Mary*. But it can appear in any sentence in which it would make sense and so is another place where the test gives unintuitive results.

##### 4.2 Noun Phrase Plus Clause and Related Complement Patterns

Noun phrase and clause combinations are generally unproblematic. However, it is often claimed that some infinitives can have subjects and thus that there are structures like (19) above, repeated here:

- We all believed [John to be there]. (19)

Noun phrase and clause combinations, if the clause is infinitive, look like:

- They forced [John] [to take on the job]. (35)

This means that there are identical sequences, a noun phrase followed by a *to*-infinitive, assigned differing analyses. In (35) the postverbal noun phrase is the object of the higher verb, in (19) the subject of the lower. This difference in analyses needs justifying, and we will sketch a partial justification directly. The combination illustrated in (35) is often termed an 'equi' or 'object control' structure; (19) is known as an 'accusative and infinitive' since the noun phrase is in the accusative where a pronoun.

The analyses are supported by a number of observations, including differing effects of the passive. The following:

- We believed John to be being examined by the doctor. (36)  
We believed the doctor to be examining John.

are semantically related in the same way as any active-passive pair, while:

- We forced John to be examined by the doctor. (37)  
We forced the doctor to examine John.

## Verbs and Verb Phrases

are not. This suggests that the items after *believe* form a single clause which has a passive variant like that of any clause, while the items after *force* require some other analysis. Within the *believe* class a further division is necessary between those verbs which allow the higher clause a passive variant and those which do not:

- We believed the doctor to be examining John. (38)  
 The doctor was believed to be examining John.  
 We badly wanted the home side to win this game.  
 \*The home side was badly wanted to win this game.

Parallel considerations give rise to a similar distinction between a small number of 'raising' verbs such as *seem* and *happen* and the 'subject control' verbs such as *try*. Both classes are superficially simple cases of subjectless infinitive complementation:

- (a) John tried [to hit Bill]. (39)  
 (b) John happened [to hit Bill].

but in the raising case there is, surprisingly, a 'normal' relation to the passive variant:

- John tried to hit Bill ≠ (40)  
 Bill tried to be hit by John.  
 John happened to hit Bill =  
 Bill happened to be hit by John.

This would be explained if the surface subject of verbs like *happen* were part of the complement clause in the same way that the apparent object of verbs like *believe* is. Such reasoning has led many theories of grammar to postulate a level of analysis, usually called 'deep structure,' in which this is the case, so that the deep structure of (39b) would be roughly:

- happened [John to hit Bill] (41)

and (39b) would be produced by a movement 'transformation.'

'Accusative and infinitive' verbs like *believe* or *consider* also exercise no semantic restrictions on the subject of the embedded clause, similarly to other verbs which take a single clause such as *predict*, and in contrast with some 'object control' verbs such as *persuade*. Consider, for example, the possibilities of a meaningless *it* subject in the relevant positions:

- I consider it to be time to leave. (42)  
 I predict that it will soon be time to leave.  
 \*I persuaded it to be time to leave.

This observation can be repeated with some of those verbs that take a noun phrase plus adjective phrase complement sequence (some of which also take a noun phrase or prepositional phrase in place of the adjective phrase, cf. discussion of *remain* above). Thus *consider* fails to restrict its apparent object:

- They consider it hot enough for us not to wear ties. (43)

Whereas *paint* restricts it:

- They painted the car green. (44)  
 \*They painted it hot enough for us not to wear ties.

Such considerations have led some theories to analyze the *consider* type analogously to the 'accusative and infinitive' type:

- They consider [it hot enough for us not to wear ties]. (45)

The embedded unit is known as a 'small clause.'

Similarly, raising verbs like *happen* fail to restrict their surface subject, unlike subject control verbs like *try*:

- It happened to be time to leave. (46)  
 \*It tried to be time to leave.

And most verbs which take an adjective phrase complement (or noun phrase or preposition phrase with the appropriate semantic force) fail to restrict their surface subject:

- It remained hot enough for us not to wear ties. (47)

Thus analyses, analogous to the raising analyses of verbs like *happen*, have been postulated where the deep structure of such verbs involves a small clause complement:

- remained [it hot enough for us not to wear ties]. (48)

### 5. Ordering among Postverbal Elements

We have identified a variety of complements and of combinations of complements. The most important other class of postverbal element is the modifiers, such as adjectival adverbs, many PPs, infinitives of purpose, etc. In this section we examine in what order these units may or may not appear.

Ordering among postverbal elements is rather complex. It is perhaps best seen as an interaction between a partially ordered sequence of complements and an unordered sequence of modifiers, where the two may interleave. The ordering of complements is basically a matter of word class. Thus two PPs or an AdvP and a PP are unordered:

- We compete [with several establishments] (49)  
 [for this trade].  
 We compete [for this trade] [with several establishments].  
 They went [about this job] [very watchfully].  
 They went [very watchfully] [about this job].

A clause is always the last complement:

- John signaled [to Bill] [to follow]. (50)  
 \*John signaled [to follow] [to Bill].

Some modifiers may fairly freely interrupt the complement sequence or precede it:

- We compete [for this trade] vigorously (51)  
 [with several establishments].  
 We rely every day [on this computer].  
 I said to break the silence [that I had seen John recently].



However, almost nothing may precede the NP complement or complements, whether complement or modifier:

- \*I deprived [of food] [the mice]. (52)  
 \*I use incessantly [the hammer].  
 \*I handed [John] hurriedly [the phone].  
 \*I handed hurriedly [John] [the phone].

unless that NP is 'heavy':

- I deprived of food [every mouse in the control group]. (53)  
 I use incessantly [a half-pound ball-pein hammer].

A PP complement which contains nothing but a preposition shows very peculiar behavior, which is the same whether or not it makes a compositional contribution to meaning. It may precede or follow a single NP complement:

- Next they will send [out] [the letters]. (54)  
 Next they will send [the letters] [out].  
 John looked [up] [the number].  
 John looked [the number] [up].

but must follow the first of two NP complements:

- \*Next they will send [out] [the customers] (55)  
 [the letters].  
 Next they will send [the customers] [out] [the letters].  
 \*John ran [up] [Mary] [a dress].  
 John ran [Mary] [up] [a dress].

If there are any complements apart from NPs, the single-word PP must precede one of them:

- They send the letters [out] [from headquarters]. (56)  
 \*They send the letters [from headquarters] [out].  
 They send the letters [from headquarters] [out]  
 [to the customers].  
 I will not put [up] [with these interruptions].  
 \*I will not put [with these interruptions] [up].

If a noun phrase complement is pronominal, nothing but another pronominal may intervene between it and the verb:

- \*I handed [John] [it]. (57)  
 I handed [him] [it].  
 \*John ran [up] [it] (in the sense of 'made').  
 John ran [it] [up].

## 6. Hierarchical Structure of the Clause

Most theories of phrase structure postulate that there are several levels of hierarchy in a sentence phrase marker between the clause (called CP for "complementizer projection") and the verb. Thus there would be analyses like:

- [<sub>CP</sub> Never have [<sub>IP</sub> I [<sub>VP</sub> seen such a large green (58)  
 woodpecker]]].

The distinction drawn between CP and IP is outside the scope of this article, and we turn to the VP unit which is postulated intermediate between the sentence and the verb. It includes the complements

and modifiers of the verb but excludes the subject and at least the first auxiliary.

The most compelling reason for accepting this analysis is the ability of the putative unit to appear in initial position as well as final:

- [<sub>VP</sub> Seen them at night] I never have. (59)  
 [<sub>VP</sub> Give John a present] I refuse to.

More than one unit is not permitted in this position:

- \*[John] [a present] I refuse to give (60)

so the sequence *seen them at night* must be a single unit. Further confirmation comes from the fact that the VP may be omitted in certain contexts, where multiple units cannot:

- Give John this money? I refuse to— (61)  
 Give John this money? \*Well, I certainly refuse  
 to hand—

where '\_\_\_\_' represents an omission site.

When applied to this verb phrase unit, the so-called 'X-bar' theory of phrase structure has at least three consequences:

- Every verb phrase must contain a verb. (62a)  
 Every item in the verb phrase other than the verb (62b)  
 is phrasal rather than an instance of any smaller unit.  
 There is a unit V' ('V-bar'), containing the verb (62c)  
 and its complements but no modifiers,  
 intermediate between V and VP.

Principle (62a) seems true. Principle (62b) seems a highly desirable restriction: there are very few slots other than head slots anywhere in syntax where anything less than a full phrase appears to be allowed. Principles (62a) and (62b) alone would justify a version of X-bar theory in which there was no intermediate unit: VP would contain V and a number of phrases. Such a theory would represent a great advance on a theory which says no more than 'Natural language syntactic structures have the form of trees,' as the earliest versions of transformational grammar said, since it restricts the range of possible analyses.

To such a theory is always added (62c), to give a theory which similarly restricts analyses but also postulates an extra unit consisting of a verb and its complements. The main justification for (62c) is the observations involved in the *do so* test. In a sentence such as (4) above, repeated here:

- I painted this room in a day, whereas a (4)  
 professional would do so in an hour.

*do so* refers anaphorically to the sequence *painted this room*, and it is argued that any sequence anaphorically referred to must be a unit. Hence the analysis contains a V':

- I [<sub>VP</sub> [<sub>V'</sub> painted this room] in a day]. (63)

If the reader finds this unconvincing, the present author is in a poor position to convince, being unconvinced himself. A theory with (62c) seems incapable of providing any analysis of quite ordinary sentences such as (51) above where modifiers precede complements. It is impossible to bracket (51) in such a way that there is a V' including the verb and complement(s) but excluding its modifiers. However it must be emphasized that (62c) is overwhelmingly the standard assumption.

A related justification for (62c) is that *do so* cannot take any complement of its own, cf. (5) above. If it is then postulated that V' exists, and that *do so* is a V' rather than a V, this is explained (since there may not be any complement outside the V'). But there is a

much simpler explanation, namely that *do so* is like *elapse* in having no complements as a lexical specification.

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## Voice

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The term 'voice' derives from the Latin noun *vox* 'sound, word.' Because of the possible confusion with the phonetic terms having to do with voicing, some linguists prefer the Greek term *diathesis* 'state, function' over voice. To speakers of English and some other modern languages, the concept of voice is most familiar in terms of the opposition of the active versus passive voice, as manifested in sentence correspondences such as 'John killed Bill: Bill was killed by John.' However, linguists use the term voice in a number of senses, its broadest definition encompassing a wide range of grammatical constructions that are commonly thought to be quite distinct from those related by the active-passive alternation.

### 1. Definitions and Problems

In a narrower sense, voice refers to morphological categories. For example, it is said that Greek has three voices: active, middle, and passive in reference to three categories of verbs that have distinct conjugational paradigms. For example, the first person plural indicative forms of the verb for 'educate' in the aorist have specific endings depending on the voice, as seen in: *epaideúsamen* (active), *epaideúsámetha* (middle), *epaideúthēmen* (passive).

On the other hand, in languages such as English and Chinese, verbs do not have distinct morphological categories for different voices. In English, the passive voice is expressed by the syntactic construction involving the combination of the auxiliary verb *be* and the past participle form of the verb. In Chinese there are no verbal markings that correlate with

different voices, and thus the active-passive opposition is not reflected in the verb at all; e.g., *Tā kànjian wǒ* (he see I) 'He sees me': *Wǒ bèi tā kànjian* (I by he see) 'I am seen by him.' In these languages, therefore, voices are defined in terms of syntactic construction with reference to specific grammatical characteristics. Since the 1980s much broader views on voice have been explored that take into consideration the pragmatic effects as well as the cognitive processes associated with voice alternations.

In addition to these different possibilities in approaching voice systems, arriving at a cross-linguistically valid definition of the term voice is made difficult because languages do not show systematic one-to-one correspondences in their voice systems. For example, even among Indo-European languages the same kind of voice opposition of active and passive is not maintained uniformly. As noted above, grammars of classical Greek recognize three voices rather than two. In the case of Latin, even though only two voices, active and passive, are morphologically distinguished, its passive forms do not show one-to-one correspondences to the English passive counterparts. The passive form *X movētur*, for example, corresponds to the English passive sentence 'X is moved' but also to the active sentence 'X moves.' In the case of the Latin passive forms of intransitive verbs, for example, *curritur*, *pugnābātur*, no corresponding English passive sentences are available, and they must be expressed by nonpassive forms such as 'There is running going on' and 'There was some fighting.'

Another problem in working out the definitions of the term voice has to do with the fact that the passive voice forms have often developed secondarily from other sources. Even in Greek, the passive forms are distinct from the middle forms only in the aorist and the future, and many Latin passive forms are similar to the Greek middle forms in meaning. In the Indo-European and in many other specific languages, what can be construed as passive expressions are a later development arising from the middle voice and other sources (see below). Attempts at the characterization of voice in terms of extragrammatical concepts such as pragmatic functions and cognitive processes have been made, in part, in order to account for these historical developments and the synchronic connections that the passive expressions may have with other grammatical constructions.

### 1.1 Active Voice and Passive Voice

Despite these problems, voice oppositions are characterizable in terms of certain syntactic and semantic features transcending the distinction of whether the voice oppositions are manifested as morphological categories, as in Greek and Latin, or whether they are expressed in terms of syntactic constructions, as in English and Chinese. As a point of departure, the active-passive opposition is characterized as a sentence-level phenomenon. As the English active-passive pair 'John killed Bill: Bill was killed by John' illustrates, voice can be understood as a system of correlation between semantic roles such as agent and patient, and between grammatical functions such as subject and object. A majority of languages provides a basic voice strategy. In accusative languages, the basic strategy is to select an agent as a grammatical subject, and the active voice refers to the form resulting from this choice. The active voice in accusative languages constitutes the unmarked voice.

A large number of accusative languages provide a marked voice, which denies the agent the subject role. In many, but by no means all, languages a patient assumes the subject role in this marked voice. This marked voice, which contrasts with the basic, active voice in terms of the treatment of the agent, is the passive voice. Formally speaking then, in the prototypical active voice form, an agent is in the subject role; and in the prototypical passive form, a patient functions as a subject and an agent is syntactically unencoded, or even if it is encoded, its grammatical prominence is marginal.

There are thus two aspects to the passive form; one in which a patient role is associated with the subject, the most prominent grammatical function, and the other in which an agent role is defocused by either being completely unencoded or encoded as an adjunct. These two aspects are intimately connected, since the selection of a patient as a subject requires denying an agent the subject role, but they are also

independent to some extent. This is an important point in the understanding of the development of various passive forms, for certain passives derive from a construction that shares the patient subjecthood, while others derive from a construction in which an agent is grammatically less prominent. In addition, there are passives that only satisfy the agent defocusing aspect. The so-called impersonal passives are a case in point; consider the Latin intransitive passives given above and the German impersonal form such as *Es wurde hier getanzt* 'There was dancing here,' which all deny the agent the subject role. In some other languages, even transitive clauses are turned into the impersonal forms, in which the patients remain in object position, e.g., Hindi: *mazduurō ko bhojan di-yaa ga-yaa* (workers DAT food give-PPL PASS-PAST) (lit.) 'It was given the food to the workers'; Welsh: *Fe'i lladdwyd (gan ddraig)* (him was-killed by dragon) (lit.) 'It was killed him (by a dragon).'

### 1.2 Ergative Voice and Antipassive Voice

The so-called ergative languages differ in their voice system from accusative languages in that the treatment of the patient nominal plays the central role. In ergative languages, the basic voice strategy selects a patient as a grammatically prominent constituent, an equivalent of the subject that typically occurs in the absolutive, e.g., Warrungu (Australia): *pama-ngku kamu yangka-n* (man-ERG water. ABS search-TENSE) 'A man looks for water.'

Although the ergative construction formally resembles the passive construction—the agent is marked by the special ergative marker, just as the agent is marked by 'by' in the English passive, and the patient occurs in the absolutive (=nominative) form—it must be distinguished from the passive for a number of reasons. For one thing, the ergative construction is a transitive construction that requires both agent and patient nominal, contrasting with the passive construction in which the agent is most often unexpressed. Furthermore, the ergative is the unmarked voice form unlike the marked passive voice. Some consider an ergative construction to represent the active voice; however, such a view is inconsistent with the definition of the active voice, which refers a construction in which an agent is selected as the subject of a clause.

The marked counterpart of the ergative voice is called the antipassive voice, which denies grammatical prominence to the patient nominal by either encoding it as an oblique constituent or not syntactically encoding it at all. The Warrungu antipassive form corresponding to the above ergative form is: *pama kamu-wu yangka-kali-n* (man.ABS water-DAT search-ANTI-TENSE) 'A man looks for water.'

In addition to the marked antipassives, some ergative languages, for example, Greenlandic Eskimo, Mam (Central America), have distinct passives, while

some others, for example, Dyirbal (Australia), and Lezgian (Caucasus), have no passives. However, the role of the passives in ergative languages differs from that of the passives in accusative languages in that in the former it involves the demotion of a secondary argument. Equivalently, accusative languages may exhibit antipassives, which, in this case, demote the secondary argument of object. In terms of markedness, the active-passive and the ergative-antipassive (-passive) are aligned as in example (1):

- (1)
- |                       |                               |
|-----------------------|-------------------------------|
| <i>Unmarked voice</i> | : <i>Marked voice</i>         |
| <i>active</i>         | : <i>passive, antipassive</i> |
| <i>ergative</i>       | : <i>antipassive, passive</i> |

In the active voice, the agent nominal is typically unmarked in form (the nominative/absolute form), whereas in the passive the patient nominal is unmarked. On the other hand, in the ergative voice, the patient is in the unmarked nominative/absolute form, while in the antipassive the agent is unmarked.

The marked status of the passive voice and the antipassive voice is seen in several respects. For one these marked voices are associated with formal complexity. In the case of the English passive, it is associated with the auxiliary verb 'be' and the past participle form of the verb, which is more complex than the simple active form, and the agent nominal is marked by the preposition 'by.' Even in a language like Chinese, where the verb shows no inflection associated with the voice alternation, the passive sentence involves the preposition *bei* marking the agent nominal, whereas the corresponding active encodes the agent as an unmarked subject constituent. By the same token, the antipassive forms in ergative languages are formally more complex than the corresponding ergative forms; they typically involve an antipassive verbal marking, as in the above example from Warrungu. Second, like other items of the marked categories, marked voice forms are low in text frequency.

### 1.3 Voice in Philippine Languages

In both accusative and ergative languages, the basic voice strategies are clearly discernible, the marked status of the secondary voices being clearly reflected in formal complexity and in low text frequency. However, there are languages in which this kind of asymmetry in the voice system is not entirely clear. Philippine languages are of this type. Philippine languages such as Tagalog and Cebuano possess a system of selecting different semantic roles as a grammatical subject, but the agent subject form and the patient subject form show equal formal complexity and roughly equal text frequency. The system, often called the focus system or the topic construction, can be illustrated by the following Cebuano sentences: *Nibasa ang bata ug libro* (AF-read TOP child INDEF book) 'The child read a book,' *Gi-basa ang libro sa bata* (GF-read TOP book OBL child) 'The book was

read by the child.' In the former, agent-subject form, the verb is marked by the actor-focus prefix *ni-*, which, together with the *ang* topic marking on the agent nominal, indicates that the agent is chosen as the subject. However, the latter, patient-subject form also involves the goal-focus marker *gi-*, which together with the *ang*-marking on the patient nominal, signals the choice of the patient as the subject of the clause. While the goal-focus, patient-subject form is often translated into the English passive sentence, they are not quite equivalent, as the Philippine goal-focus sentences are transitive, requiring the syntactic encoding of an agent, and they occur as frequently as, if not more often than, the actor-focus, agent-subject sentences.

The Philippine voice system differs from the English-type active-passive system in that a wide range of nominal clausal constituents can be chosen as the subject. In English, excluding some marked forms such as 'This chair has been sat on by Fred' (see Davison 1980), only syntactic direct objects can be made the subject of a passive clause. In Philippine languages, however, not only patient nominals but also all kinds of nominals can be made the subject via voice alternation. For example, the instrumental nominal adjunct in the actor form can be made the subject of the instrumental focus form: *Ni-hiwa si Maria ug mangga sa kutsilyo* (AF-cut TOP Maria INDEF mango OBL knife) 'Maria cut a mango with a knife': *I-hiwa ang kutsilyo sa mangga ni Maria* (IF-cut TOP knife DEF mango OBL Maria) 'The knife will be (used to) cut the mango by Maria.' Because of this wide possibility of subject choice, the Philippine voice alternations are sometimes referred to as topicalization.

## 2. Properties of the Subject of the Passive

Having examined a number of widely recognized voice forms from a more or less formal point of view, the focus now shifts to the semantic correlates of voice, discussion of which paves the way to explaining the development of different types of passive forms. As pointed out earlier, there are two semantic aspects that distinguish the passive voice form from the active counterpart. One has to do with the semantic status of the subject and the other with that of the agent. The semantic status of the passive subject will be taken up first.

### 2.1 The Middle and the Passive

The typical active-passive opposition shows a semantic contrast in that in the active form the subject acts upon others or affects others, whereas in the passive form, the subject is affected or undergoes some effect. It is on this semantic contrast that the opposition between the active voice and the middle voice in classical languages such as Greek and Sanskrit is based. The Greek middle form *louomai* 'I am washing,' for example, contrasts semantically with the



active form *louō* 'I am washing (something),' in that the former expresses the situation where the action affects the subject, that is, reflexive reading when a singular subject is involved and reciprocal reading when a plural subject is involved, whereas the subject of the latter active form affects a distinct patient. Though the middle forms are also used in other situations such as when one performs a certain act for one's own benefit (e.g., *louōmai* X 'I am washing X for myself'), they typically express the circumstances where the subject is affected one way or another. In many cases of the middle form, the subject happens to be both affectee (in the above sense) and agent, but certain middle forms involve a subject that represents a purely affected entity. The Sanskrit middle expression *namate dandah* (bend-MIDDLE stick-NOM) 'The stick bends' is a case in point, illustrating what may be termed spontaneous middle.

Given these semantic characteristics of the middle forms, the English forms such as 'This stick doesn't bend,' 'The beans are cooking,' and 'These books are selling well' can be all considered as middle forms, but some linguists restrict the application of the term middle to those expressions, as in the last example, in which the verb is typically used as a transitive verb and whose subject normally occurs as a direct object in the regular transitive use of the verb.

The semantic characteristics of the middle forms are instrumental to the development of the passive from the middle. That is, the spontaneous middle may give rise to the passive by extending its use to those situations where an agent distinct from the affected subject is conceptualized. Such an agent may be left unspecified or may be tacked onto the middle clause as an adjunct. The fact that the passives in Latin are often ambiguous between the middle and the passive reading is due to this development (recall the interpretation of the Latin passive form *movētur*). Notice the importance of the conceptual presence of an agent—even unknown or omitted—for a passive form. If no agent distinct from the patient subject is conceived, the expression remains middle.

## 2.2 The Reflexive and the Passive

The reflexive and reciprocal readings associated with the middle and the development of the passive from the middle is paralleled by the development of passive expressions from reflexive forms in Romance and other languages, as attested in the following data. Spanish: (a) *Se curó a los brujos* (REFL cured.3sg. DAT the sorcerers) 'The sorcerers were cured'; (b) *Se curaron los brujos* (REFL cured.3PL. the sorcerers) 'The sorcerers cured themselves'; (c) *Juan y María se vieron en la calle* (Juan and María REFL saw.3PL. in the street) 'Juan and María saw each other in the street.' Russian: (a) *Okno moetsja rabočim* (window wash.3s. G.REFL workman.INST) 'The window is being washed by the workman'; (b) *Ivan moetsja mylom* (Ivan

wash.3SG.REFL soap.INST) 'Ivan is washing himself with soap'; (c) *My s nim bilis* (we with him hit.PL. REFL) 'He and I hit each other.' Quechua: (a) *Ropas t'agsa-ku-n mayu-pi* (clothes wash-REFL-3SG. river-in) 'Clothes are washed in the river'; (b) *Maqa-ku-nqa* (hit-REFL-3SG.FUT) 'He will hit himself'; (c) *Alqu atuqwan rik* 'u-na-ku-nku (dog fox-with look-RECIP-REFL-3PL.) 'The dog and the fox looked at each other.' Yavapai: (a) *hlo-v-c si:l-v-kñ* (rabbit-DEM-SUB fry-REFL-COMPL) 'The rabbit was fried'; (b) *hmañ-c kwe-wiv-v-i* (child-SUB thing-clothe-REFL-TNS) 'The child dressed himself'; (c) *ʔña-c pa:hmi-m hwak-k cckyat-v-c-kñ* (I-SUB man-ASSOC two-EGO cut-REFL-PL-COMPL) 'That man and I cut each other.' In fact, all the passive forms correlated with reflexives/reciprocals perhaps develop via spontaneous middle use of reflexives/reciprocals. The development, in other words, follows the path of Reflexive > Spontaneous middle > Passive, the entire range of constructions the middle category of classical Greek encompasses.

## 2.3 The Resultative and the Passive

In the case of the English passive form, there is a close affinity to the construction expressing a resultative state as exemplified by a sentence such as 'The window was broken (when I returned home),' which resembles the passive sentence 'The window was broken (by the neighborhood children).' Again, both share the property of the encoding of the patient as the subject. Whereas the resultative voice covers both instances of a result arising from an intransitive event (e.g., 'John is dead' < 'John has died'), where no alternation in the grammatical relation of the subject is seen, and the one resulting from a transitive event (e.g., 'The fish was already eaten' < 'They have already eaten the fish'), where the subject of the resultative form corresponds to the object of the transitive form, what is called passive in English (and in some other languages such as German) is a close kin to the resultative of the second type.

However, there is a distinguishing characteristic between the resultative and the passive. In the latter, there is an implicit agent that can be encoded as an adjunct, whereas in the former, the encoding of an agent is not permitted, as seen in the following contrast: 'The fish was already eaten (\*by them) when I reached the table' vs. 'Every year, a large amount of fish is eaten (by the Japanese).' Though this criterion distinguishes the passive from the resultative in the case of English, it does not work in those languages, for example, Turkish, in which the agent cannot be syntactically encoded in a passive clause. In such a case, the distinction between the two constructions under consideration is hard to draw.

## 2.4 The Passive and the Potential

In some other languages, the affinity of the passive form to other constructions goes far beyond the

semantic similarity shared by the subject nominal. For example, in Japanese the suffix *-rare/re* occurs not only in the passive, but also in the honorific, the potential, and the spontaneous constructions. A similar correlation is seen in Ainu, where the prefix *a-* occurs in the passive, the spontaneous, the plural, the honorific, and the indefinite person constructions. Japanese: (a) *Taroo wa sikara-re-ta* (Tarô TOP scold-PASS-PAST) 'Tarô was scolded'; (b) *Boku wa ne-rare-na-i* (I TOP sleep-POTEN-NEG-PRES) 'I can't sleep'; (c) *Sensei ga warawa-re-ta* (teacher laugh-HON-PAST) 'The teacher laughed (hon.)'; (d) *Mukasi no koto ga sinoba-ru* (old-time of thing NOM think.about-SPON-PRES) 'The things of the old time come to my mind.' Ainu: (a) *Tampe a-e-kore* (this 1PL-2SG.-give) 'We give this to you'; (b) *Tan chep anakne a-satke wa a-eiwanke-p un* (this fish TOP INDEF-dry and INDEF-use-thing is) 'This fish is a thing that one dries and uses'; (c) *A-en-kore* (2.HON-1SG.-give) 'You (hon.) give me (something)'; (d) *Chip a-nukar* (ship SPON-see) 'A ship is visible/seen.'

In the case of Japanese, it is generally believed that the passive arose from the spontaneous construction in the same way as the passives arising from the middles in some Indo-European languages. The spontaneous middle-potential affinity also appears to be motivated by the semantics of the subject. The potential reading is an extension of the spontaneity expressed by the spontaneous middle subject. Again, quite a few languages extend the reflexive/reciprocal to the potential use. Russian: *Detjam ne spitsja* (children.DAT not sleep.3SG.REFL) 'Children can't sleep.' Spanish: *¿Se va por aquí a la estación?* (REFL go.3SG via here to the station) 'Can one go to the station from here?'

Just like the resultative, the potential forms derive from both intransitive and transitive verbs. When the potential is derived from a transitive, some languages exhibit certain changes in the syntactic treatment of the participant nominals. In Japanese, for example, the marking of the object nominal of a transitive clause shifts from the accusative to the nominative under the potential conversion; *Taroo ga hon o yomu* (Tarô NOM book ACC read) 'Tarô reads books' → *Taroo ni (wa) hon ga yom-e-ru* (Tarô DAT (TOP) book NOM read-POTEN-PRES) 'Tarô can read books.' Because of this change in the treatment of the object nominal, the potential of this type is also regarded as a voice phenomenon.

### 3. The Pragmatic Effects of the Passive

A situation more problematic than the passive-potential connection is the affinity of the passive to the honorific, the plural, and the indefinite person constructions, as observed in the above examples from Ainu and Japanese. The correlations among these constructions are fairly widespread and observable in other languages such as Chamorro, Mojave (North

America), Guarijío (North America), Quechua, and Indonesian. Here attention must be shifted from the semantic properties of the passive subject to those of the agent. In particular, the perspective on the passive must be widened to include the pragmatic functions of the passive.

As pointed out above, the presence of an agent must be conceptualized for a clause to be construed as a passive. But the passive assigns it a peripheral role in syntax even if it is encoded. Such a possibility is motivated pragmatically, when the identity of the agent is already known, unspecifiable, or unimportant. In other words, by either not encoding an agent or by encoding it in periphery, i.e., as an adjunct, the passive has the effect of defocusing an agent. It is this pragmatic function of agent defocusing that unifies it with other constructions such as the plural, the honorific, and the indefinite person constructions.

#### 3.1 The Passive, the Plural, the Honorifics, and the Indefinite Person Construction

A universal characteristic of honorific speech (see *Honorifics*) lies in its indirectness; and one of the clear manifestations of this is avoidance of the singling out of an agent, which refers to the addressee, the speaker, or the person mentioned in the sentence. Defocusing of an agent in some way is thus an integral component of the honorific mechanism. One frequent method of agent defocusing is the use of plural forms even in reference to a singular agent. The development of plural pronouns, for example, French *vous*, German *Sie*, Russian *vy*, as honorific forms in European languages is a reflection of the choice of this method of agent defocusing. The use of plural forms for honorific purposes, however, is not limited to European languages.

The passive-honorific-plural connection thus finds its explanation in the shared pragmatic function of agent defocusing, and the same notion applies to the passive/indefinite person connection.

In languages like Hungarian that do not have a passive construction, the passiveness is often expressed by the indefinite person constructions involving indefinite pronouns corresponding to 'they,' 'one,' and 'we.' Indeed, many passive constructions arise from this kind of indefinite person construction. The development of the Ainu passive has taken this path. In this kind of development, the passive forms leave fairly clear morphological traces of the active indefinite person constructions. Thus, the verbal morphology of the Ainu passive form *Umma a-a-raike* 'The horse was killed' can be analyzed as an active indefinite person form; namely as INDEF-3SG.-kill. Undoubtedly, the sentence was understood in the sense of the indefinite person construction, as 'They killed a horse,' until the agentive phrase, in the form of a postpositional phrase NP *orowa* 'from NP,' was tacked onto this construction, as in *Umma kamui*

*orowa a-raike* 'The horse was killed by the bear.' At this stage, the indefinite person reading is no longer appropriate and the birth of a passive construction is witnessed.

The same kind of development is seen in Kimbundu (Bantu), and Trukic (Austronesian) as well as in Indonesian. Kimbundu: *Nzua a-mu-mono (kwa mame)* (John they-him-saw by me) 'John was seen (by me).' Trukic: *Waan re-liila-ø ree-i* (John they-kill-him by me) 'John was killed by me.' Indonesian: *Mobil itu dapat di-perbaiki (oleh kita)* (car the can they-repair by us) 'The car can be repaired (by us).'

#### 4. Cognitive Accounts

Finally, certain cognitive accounts have been advanced to the understanding of voice. The connection between the resultative construction and the passive was noted earlier. In fact, across many languages, there are intimate connections among the stative, the resultative, the passive, and the perfect. A cognitive concept of perspective or viewpoint is said to be responsible for this unity. That is, all these constructions share the property of reflecting the speaker's perspective toward the described state/event. Namely, the speaker's viewpoint is focused on the patient participant whose state is typically at issue in these constructions.

The same kind of explanation has been advanced to account for the voice patterns among ergative languages (cf. Dixon 1979; DeLancey 1981). Many ergative languages exhibit what is known as 'split ergativity,' a phenomenon whereby transitive clauses are encoded either in the ergative (voice) construction or the nominative (active voice) construction. The ergative option, in which the patient occurs in the absolutive, is likely to be chosen when the verb implies a resulting effect in the patient nominal or when the tense/aspect/mood categories imply the completion of the event, i.e., when the speaker's interest lies in the state of the patient nominal. On the other hand, the nominative option is preferred when the referent of the agent nominal is psychologically closer to the speaker, e.g., speaker, hearer, human, animate.

In the final analysis, voice is correlated with the cognitive status of the referents of various nominal constituents. In the case of the active-passive alternation, differences in the cognitive status of agent and patient are reflected in changes in the grammatical relations. The nominal whose referent has the highest cognitive status occupies the most grammatically prominent slot in the clause structure, namely subject position. The idea is that the manner of grammatical encoding reflects the cognitive status of the nominal referents. In the active voice, the agent has the status of the highest cognitive saliency, and it is encoded as a subject, the most essential element in clausal organization. In the passive, the agent has a peripheral cognitive status, and thus is encoded as a marginal

syntactic element, i.e., as an adjunct, in syntax, if it is encoded at all. On the other hand, the patient subject nominal in the passive reflects its central cognitive status.

The hypothesis is that the direct clausal arguments such as the subject and the object encode those nominals whose referents have higher cognitive status compared to those that are encoded as obliques or adjuncts. Among the direct arguments, the subject encodes the nominal referent whose cognitive status is most central. This conception of voice permits accommodation of three other constructions, causatives, adversatives, and applicatives, within the system of voice.

When an additional agent is introduced in the event scene, and when it is construed as the agent ultimately responsible for the occurrence of the event, a causative expression obtains, in which the ultimate agent is encoded as the subject and the one that is immediately responsible for the event is encoded as the direct object or oblique object; Japanese: *Ziroo ga aruk-u* (Jirô NOM walk-PRES) 'Jirô walks' → *Taroo ga Ziroo o aruka-se-ru* (Tarô NOM Jirô ACC walk-CAUS-PRES) 'Tarô makes Jirô walk.' A major issue in the 'causative voice' revolves around the manner in which two agents are syntactically accommodated (cf. Comrie 1976).

In the case of the causative voice, an external agent is introduced into the clausal structure. For some languages, it is possible to incorporate an indirectly affected entity into the clausal organization. A well-known case of this is the indirect passive in Japanese, where an indirect affectee is introduced as the subject of a passive clause, e.g., *Taroo wa hahaoya ni sina-re-ta* (Tarô TOP mother by die-PASS-PAST) 'Tarô had his mother die.'

Whereas the Japanese passive involves the indirect affectee as a central element, German, Spanish, and some other languages permit the incorporation of indirect affectees as less prominent syntactic elements, namely as dative adjuncts, e.g., German: *Mir zerbrach meine Vase* 'My vase broke into pieces on me.' Spanish: *Mi bebé me llorò toda la noche* 'My baby cried all night on me.'

These constructions often express unfavorable effects upon indirect affectees; and thus the Japanese indirect passive is often referred to as the 'adversative passive.'

While discussions of voice mostly center around phenomena that involve alternations over the grammatical functions of subject and object, the cognitive account being explored here naturally embraces the phenomenon involving the object—oblique alternation exhibited by the pair such as 'John bought a book for Mary: John bought Mary a book.' When this kind of alternation, known as the dative-shift in the literature dealing with English syntax, has morphological repercussions, the derived (double-object) form is

known as the 'applicative construction.' Applicatives are observed widely among Bantu languages as well as in Ainu, where the derived verbs with an applicative affix encode as objects not only benefactives, but also locatives, instrumentals, and even some other roles that are normally encoded as adjuncts, e.g., Ainu: *A-kor kotan ta sirepa-an* (1SG-have village at arrive-1SG) ~ *A-kor kotan a-e-sirepa* (1SG-have village 1SG-APPL-arrive) 'I arrived at my village.' Kinyarwanda (Bantu): *Umwáálimu a-ra-andik-a imibáre ku kibáaho* (teacher he-PRES-write-ASP math on blackboard) ~ *Um-wáálimu a-ra-andik-á-ho ikibáaho imibáre* (teacher he-PRES-write-ASP-APPL blackboard math) 'The teacher is writing math on the blackboard.'

Notice that the applicative voice has the effect of increasing the valency of the verb. In the Ainu data, the applicative form is transitive, with a direct object and the transitive version of the person-marker in the verb. In the Kinyarwanda data, the applicative form has two direct objects, whereas the corresponding nonapplicative version has one object with a locative adjunct expressed as a prepositional phrase.

The cognitive account for voice that associates the manners of syntactic encoding and the cognitive centrality of the nominal referents of various semantic roles poses a tantalizing question about the typological differences among the world's languages. That is, do the typological differences reflect the differences in

the worldview of the speakers of different types of languages? For example, do the speakers of accusative-type languages, in which the agent is encoded as the most salient role in the unmarked voice, view the world differently from the speakers of ergative-type languages, in which the patient is encoded as most central in the unmarked voice?

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## Word Order and Linearization

A. Siewierska

Word order and linearization are major areas of linguistic inquiry within all linguistic traditions: descriptive, theoretical, and typological. This article concentrates on the typological perspective centering on the notion of 'basic order.'

It begins with a consideration of the notion of basic order, then proceeds to review the distribution of word order patterns on a cross-linguistic basis, and next presents a brief account of the host of interrelated factors deemed to underlie the recurring linearizations. The article closes with a specification of the major problems posed for theory specific accounts of universal word order phenomena.

### 1. The Notion of Basic Order

In the wake of Greenberg's (1963) seminal investigation, the order of major clausal constituents has been characterized in terms of the relative positioning of the subject (S), object (O), and verb (V), giving rise to a typological classification of languages into SVO, SOV, VSO, OVS, VOS, and OSV. Since most, if not

all, languages exhibit some variation in the ordering of major clausal constituents, the characterization of a language with respect to the above six-way typology is achieved in relation to the meta-theoretical concept of basic order. Within the context of typological studies the term basic order, at the sentence level, is typically identified with the order that occurs in stylistically neutral, independent, indicative clauses with full noun phrase (NP) participants, where the subject is definite, agentive, and human, the object is a definite semantic patient, and the verb represents an action, not a state or an event. It is important to note that for reasons to be specified presently, the basic order, defined as above, may, but need not, correspond to the statistically dominant word order in a language. The identification of the basic order of a language has a limited heuristic value in that it does not correlate with a unified set of word order properties on a cross-linguistic basis. Nonetheless, enough significant subregularities of order have been observed to follow from the basic order to warrant



taking the Greenbergian typology as a point of departure for further examinations of universal word order phenomena.

In view of the above-mentioned requirements imposed on the constituents of clauses in terms of which the basic order is defined, the determination of the basic order of a language is not always a straightforward matter. For instance, in some ergative languages it is not always clear which constituent of a transitive clause should be considered as subject and which as object, owing to the conflicting results obtained from the typical subject identifying criteria. Another problem arises in connection with the necessary presence of two full NP participants. There are languages in which such transitive clauses are nonexistent (e.g., Puget Salish) or uncommon (e.g., Apalaí, Gunwingu, Yatzachi, Zapotec) since the subject and/or object must or tends to be expressed solely by pronominal affixes on the verb or by clitics elsewhere in the clause. Two or more word order patterns may be in competition for basicness as in languages such as Guugu-Yimidhirr, Sahaptin, or Samoan, which exhibit considerable word order variation at the sentence level. This variation is conditioned by the distribution of given and new information or the relative newsworthiness of the informational content of the constituents of the utterance. Furthermore, some languages display different word order preferences dependent on text types. Russian is a case in point, as it is seen to favor SVO order in the formal written language but SOV in the colloquial spoken language.

The above problems notwithstanding, unique decisions as to the nature of the basic order can be made for the vast majority of languages.

## 2. Distribution of Basic Orders of Major Clausal Constituents

The relative frequency of occurrence of the six basic orders has been established and confirmed by several independent investigations. Table 1 lists the percentage of languages exhibiting each of the six basic orders in the language samples of Greenberg (1963), Ruhlen (1975), Mallinson and Blake (1981), Hawkins (1983), and Tomlin (1986).

As suggested by the figures in Table 1, in terms of frequency of occurrence, the six basic orders fall into

two subgroups: subject-before-object languages and object-before-subject ones. The former are widely attested, while the latter did not feature in Greenberg's original sample at all, and subsequently have been found to occur in less than 5 percent of the world's languages. Of the subject-before-object languages SOV and SVO by far outnumber the VSO ones, and among the three linearization patterns in which the object precedes the subject, OSV is the rarest.

### 2.1 Sampling Techniques

The language frequencies reflected in the data in Table 1, with the exception of Tomlin's (1986) figures, are based on random language samples. Consequently, though the above figures provide a good indication of the frequencies of the six basic orders among the world's languages, the cross-linguistic preferences and to a lesser extent dispreferences that they define cannot be automatically assumed to be due to inherently linguistic factors underlying the nature of human language, as opposed to nonlinguistic forces such as genetic affiliation, areal distribution, typological structure, and cultural identification. Particularly in need of investigation is the impact of nonlinguistic influences on the frequency of basic orders displaying relatively similar levels of occurrence such as SOV versus SVO or the three object-before-subject orders. For example, it is generally claimed that there is no linguistic preference for SOV as compared to SVO order, since the slightly higher frequency of SOV languages is not statistically significant. Yet several linguists have pointed out that in Tomlin's (1986) language sample, which is the most representative of the language samples cited in Table 1, 40 percent of the SVO languages are Niger-Congo. Therefore, had it not been for various historical factors which led to the expansion of the Niger-Congo language family, the frequency of SVO would have been markedly lower, and by the same token the linguistic preference for SOV languages much clearer. Historical factors may also be responsible for the relatively high frequency of occurrence of VSO as compared to the object-before-subject languages, since the majority of VSO languages belong to the Austronesian language family.

In order to minimize the genetic, areal, and cultural biases inherent in random sampling, new sampling methodologies are being applied involving stratified language samples as discussed by Perkins (1989). The proposed language samples, such as those developed by Rijkhoff, et al. (1993), seek to select a proportional number of maximally differentiated languages, both areally and genetically, the latter criterion being sensitive not only to variation across language families, but also to variation within individual phyla. These more representative language samples will provide a better understanding of the interplay between linguistic and nonlinguistic determinants of order and thus

Table 1. Frequency of six basic orders in the world's languages.

	SOV	SVO	VSO	VOS	OVS	OSV
Greenberg (142)	45.0	36.6	18.3	—	—	—
Ruhlen (427)	51.5	35.6	10.5	2.1	—	0.2
M & B (100) <sup>1</sup>	41.0	35.0	9.0	2.0	1.0	1.0
Hawkins (336)	51.8	32.4	13.3	2.3	—	—
Tomlin (402)	44.8	41.8	9.2	3.0	1.2	—

<sup>1</sup>In Mallinson and Blake's sample 11 languages are not classified in terms of this typology. Therefore the percentages in this row do not add up to 100.

contribute substantially to a fuller appreciation of the universal and particular features of human language.

## 2.2 Typological Markedness

Since around 95 percent of the world's languages display basic orders in which the subject precedes the object, such ordering is seen to be typologically unmarked, while the converse object-before-subject order is labeled as marked. The source of the difference in markedness of the two word-order patterns is a topic of continuing debate. The dominant view associates the different markedness values with differences in ease of processing, and the adoption of the respective linearizations with the instantiation of an addressee-oriented principle of communication in the case of subject-before-object languages as opposed to a speaker-oriented communicative strategy in the case of object-before-subject ones.

The basic properties of subjects and objects in the two groups of languages are by and large the same: subjects tend to be human, semantically agentive, and moreover topical and therefore they typically convey given information, whereas objects are generally inanimate, semantically nonagentive, frequently focal and thus informationally new. Psycholinguistic research summarized in Bock (1982) suggests that the processing of easily accessible language data, where high accessibility correlates with the above-mentioned features of subjects, involves an 'automatic' processing mode and contrasts with the 'controlled' processing of less accessible language material. It is therefore argued that the presentation of easily accessible language data before less accessible information, as is the case in subject-before-object orders, facilitates syntactic processing since it frees both the speaker's and the addressee's processing resources for the controlled processing of the less accessible material. Moreover, the automatically processed data provides the basic frame or perspective for the interpretation of the utterance; hence the processing task of the addressee is made easier if this perspective is presented first. Conversely, presenting new or more newsworthy and thereby less accessible information first, as in object-before-subject orders, is seen to impede the addressee's cognitive processing, in view of the fact that the relevance of the material delivered earlier in the utterance does not become apparent until the whole utterance is complete.

The communicative strategy adopted by the dominant subject-before-object languages is viewed as addressee-oriented because the speaker, having some new or newsworthy information to deliver, places the addressee's need for clarity and distinctiveness above his own need to divulge the message. In object-before-subject languages, on the other hand, the addressee's need of a prior perspective for the interpretation of the utterance is sacrificed to the immediate interests of the speaker, and hence the

speaker-oriented view of such word-order patterns. The addressee versus speaker orientation underlying the markedness value of subject-before-object as compared to object-before-subject ordering is currently regarded as a major source of typological markedness in general. It is argued that though human language is geared to serve both speakers and listeners, it is intrinsically more difficult for the listener to decode the message than for the speaker to encode it, since the speaker has knowledge of what is going to be said, but the listener does not. Consequently, an optimal communicative system should be biased toward the addressee rather than the speaker. Though requiring further verification, the fact that the source of the markedness contrast between subject-before-object as compared to object-before-subject languages may follow from a more general principle of markedness must be regarded as a significant finding of typological research.

## 3. The Natural Serialization Principle

Greenberg's (1963) six-way division of languages into SOV, SVO, VSO, OVS, VOS, and OSV has been supplemented by a two-way typology of VO and OV languages originating in the dependency tradition and the work of the nineteenth-century German typologists. This two-way typology is based on the division of constituents into head/modifier pairs such as: verb/object, verb/adverbial, auxiliary/main verb, noun/adjective, noun/relative clause, noun/genitive, noun/determiner, adposition/noun phrase, adjective/adverbial (where the first member of the pair is the head and the second the modifier).

The basic insight of the VO/OV typology is expressed by Vennemann's (1972) natural serialization principle (NSP) and its analogs, which stipulate that languages show a preference for serializing constituents in terms of either the head > modifier schema (VO, centrifugal) or, modifier > head pattern (OV, centripetal). Languages exhibiting linearization patterns in complete conformity with the NSP are termed 'consistent.' Consistency, however, is currently viewed not as a norm, but as an ideal which languages approximate to various degrees. Thus, for example, given that the subject qualifies as a modifier of the verb, all SVO languages are by definition inconsistent. And of the languages in Greenberg's Appendix II, 95 (67 percent) are inconsistent in terms of just five head/modifier pairs, i.e., verb/object, verb/subject, adposition/noun, noun/adjective, and noun/genitive. Of these 95 languages, 57 are inconsistent with respect to 1 of the 5 head/modifier pairs, and 38 with respect to 2. Both the number of inconsistent languages and the degree of inconsistency increase once other head/modifier pairs are considered.

In view of the fact that the vast majority, if not all, languages exhibit a measure of inconsistency the word order predictions incorporated in the NSP have been

refined by supplementary principles which seek to specify among the inconsistent orderings the regularities that do obtain.

### 3.1 Supplementing the NSP

A number of subregularities of order of a high level of generality have been captured by Hawkins (1983) in the principle of cross-category harmony (PCCH). The PCCH states that languages display a preference to generalize the order obtaining in one head/dependent category to that of other categories. Departures from this preference in one head/dependent category are in turn likely to induce comparable departures in other head/dependent pairs. Thus, for example, Hawkins notes that the continuum in verb position, verb-initial, verb-medial, verb-final, is reflected in the position of the noun in relation to its modifiers. This is shown by the fact that VSO languages are more consistently noun-initial than SVO languages, in which the preposing of the subject in relation to the verb is often mirrored by the preposing of the adjective and/or genitive and/or determiner before the noun. Moreover, nonrigidly verb-final SOV languages (SOV languages which allow for the placing of some modifiers to the right of the verb) tend to have some nominal modifiers following the noun, while rigidly verb-final SOV languages generally serialize all their modifiers prenominally.

Recurrent patterns have also been found to underlie the inconsistent placement of modifiers relative to the noun, negative elements relative to the verb or verb stem, and the location of conjunctions and subordinators. Of particular interest is the cross-linguistic distribution of noun/modifier pairs. Hawkins (1983: 75, 86), using a typological division of languages based on the presence of prepositions (prepositional languages) vs. postpositions (postpositional languages)—which he takes to be superior to the two-way verb-based typology—considers the statistical frequency of the ordering of noun/modifier pairs and in particular the patterns of preposing a modifier before the noun in prepositional languages, and of postposing a modifier after the noun in postpositional languages. He observes that in the case of prepositional languages, the first to be preposed are the demonstrative or numeral; then both; next comes the adjective; followed by the genitive; and finally the relative clause. This is captured in the prepositional noun modifier hierarchy (PrNMH) (1):

$$\text{Prep} \supset ((\text{NDem} \vee \text{NNum} \supset \text{NA}) \& (\text{NA} \supset \text{NG}) \& (\text{NG} \supset \text{NRel})) \quad (1)$$

The postposing of modifiers in postpositional languages begins with the adjective; then comes the relative clause; then the demonstrative or numeral; and finally the genitive. The order of modifier postposing is represented in the postpositional noun modifier hierarchy (PoNMH) (2):

$$\text{Post} \supset ((\text{AN} \vee \text{RelN} \supset \text{DemN} \& \text{NumN}) \& (\text{DemN} \vee \text{NumN} \supset \text{GN})) \quad (2)$$

The principle underlying the two-noun modifier hierarchies is the preference for placing 'lighter' constituents to the left of 'heavier' ones (see Sect. 4.3). Given the progressive increase in length and complexity and thereby heaviness from the demonstrative to the relative clause, the PrNMH is fully consistent with the light > heavy principle, the PoNMH only partially so, namely in that relative clauses tend to be postposed earlier than demonstratives or numerals. Significantly the predictions captured in the two-noun modifier hierarchies are corroborated by the actual quantities of languages displaying the stipulated co-occurrences. Thus, for example, there are more prepositional languages in Hawkins's sample in which a numeral is placed before the noun (44), than those with a prenominal demonstrative (38) or genitive (19), and there is only one language with a preposed relative clause.

### 4. Ordering Relations Among Modifiers

The NSP stipulates a preference for serializing modifiers either to the right or to the left of the head, but it says nothing about the relative ordering of modifiers among each other. The most general principle pertaining to the sequencing of modifiers (as compared to the ordering of modifier pairs) takes the form of a constraint against discontinuous constituents which ensures that a modifier will be separated from its head only by other modifiers of the same head. The most notable departures from this norm leading to discontinuities within noun phrases and adjectival phrases are to be found among the languages of the Australian continent, and also in several European languages such as Russian, Polish, or Latin. More widespread are instances of discontinuity involving relative clause and PP extraposition, subject-raising, and parenthetical placement, all of which require special pragmatic motivation. The ordering characteristics of modifiers among each other have been captured in the form of several related principles, the most important of which are discussed briefly below.

#### 4.1 Iconicity

Any facet of structure—thus also any word order pattern—which corresponds to the order of things in the real world and which reflects generally accepted perceptions of dominance and salience and/or established semantic dependencies may be viewed as iconic (Haiman 1985). One of the manifestations of iconicity, thus broadly conceived, is subject and/or object selection, and linearization in line with what is known as the personal hierarchy (3):

$$\begin{aligned} 1\text{person} &> 2\text{person} > 3\text{person human} > \\ &\text{higher animals} > \text{other organisms} > \\ &\text{inorganic matter} > \text{abstracts} \end{aligned} \quad (3)$$

## Word Order and Linearization

The personal hierarchy reflects the unqualified interest of humans in the ego, their conversational partners, and other humans over and above nonhuman entities or abstract situations and events. It predicts a preference for clauses with human or animate subjects such as *People are dying of starvation* rather than inanimate or abstract ones such as *Starvation is killing people* which is consistently adhered to on a cross-linguistic basis. Apart from the effect that the personal hierarchy exerts on linearization via subject and also object selection, its influence is often observed in the linear arrangement of clitics and bound pronouns, and in the order of conjuncts. In the latter case, however, it may interact with considerations of social status, relative authority, and politeness as evinced by the formal *you and me* as compared to the colloquial *me and you*. Essentially iconic is also the strong correlation between subjecthood and agentivity mentioned in Sect. 2.2, which is seen to reflect a preference for presenting events and situations in line with the actual development of things in the real world. Our perception of natural progression in the case of an action event is from the agent to the patient and for an act of giving from giver to receiver. The choice of agent for subject over that of patient or recipient is thus consistent with both the perceived directionality of events and the dictates of the personal hierarchy.

Under the broad view of iconicity may be subsumed virtually all of the other principles of order that have been proposed to date including the ones to be mentioned in the following sections. More commonly, however, by iconic ordering is meant ordering in line with actual temporal succession. The effect of temporal ordering is discernible particularly in the placement of adverbials and conjuncts. For example, in Mandarin a projected destination is positioned preverbally, a destination already reached postverbally. In English source tends to be placed before destination or goal as in *on the road from Amsterdam to Rotterdam* rather than *on the road to Rotterdam from Amsterdam*. As for conjuncts, in numerous languages, conjuncts generally serialize in ordered sequences such as: first, second ... last; beginning, middle, end; anterior, posterior; or a, b, ... z, etc., as reflected in expressions like: *in and out; there and back, or at sixes and sevens*.

### 4.2 Semantic Bonding

The claim inherent in the principle of semantic bonding is that the tighter the semantic link between a modifier and the head, the closer the modifier is likely to be located to the head. The influence of this principle may be observed in the sequencing of the verbal arguments and adjuncts, the ordering of different types of adjectives and adverbials and also in the placement of bound morphemes relative to the stem.

As regards the verbal arguments, the direct object

and verb are seen to form a more cohesive semantic and syntactic whole than the subject and verb. This fact in turn is taken to underlie the cross-linguistic infrequency of basic VSO as compared to SOV and SVO orders and the extreme rarity of OSV *via-à-vis* the slightly less rare OVS and VOS. To the tight semantic bond between the object and verb is also attributed the tendency to place indirect objects and verbal adjuncts either to the left or the right of the verb-object sequence. This tendency is especially strong in SVO languages in which SVXO orders are found only in heavily restricted sets of circumstances. SOV languages are more permissive in this respect; there are some SOXV languages, and the ones which display SXOV basic order may have SOXV as an option. Nonetheless, the preservation of the integrity of the verb and object combination may be assumed to provide the motivation for the relatively frequent SOVX ordering.

Differences in semantic bonding have also been observed between the verb and its adjuncts. For example, adjuncts designating instruments, speed, or manner specify additional properties of the situation or event denoted by the predicate and its arguments and thus may be viewed as entering into a close semantic relation with the nucleus of the predication. A looser semantic bond exists between the nucleus predication and adjuncts of location, time, or frequency since they do not affect the nature of the designated situation or event, but merely define its spatial or temporal location. Even more loosely related to the predication are epistemic, evaluative, and evidential adjuncts which reflect the speaker's evaluation of or attitude towards the content of the predication while not actually contributing to the semantic content of the predication itself. And the most distinctly linked to the predicate nucleus are illocutionary adjuncts which modify the force of the basic illocution of the utterance. Though the order of verbal adjuncts even more so than that of the arguments is subject to the effect of pragmatic factors, a preference has been discerned for linearizations reflecting the just-noted degrees of semantic bonding. For instance, in the English clause *Honestly, you certainly performed brilliantly yesterday* the illocutionary adverb *honestly* precedes the subjective epistemic adverb *certainly*, and the manner adverbial *brilliantly* is placed closer to the predicate than the temporal adverbial *yesterday*. The semantic modifications introduced by adjuncts can also be expressed morphologically by bound forms, the ordering of which relative to the stem tends to reflect the same semantic scope relations as in the case of adjuncts. For example, the preferred order of application of 'aspect,' 'tense' and 'modality' markers relative to the stem of the verb is either verb-ATM or MTA-verb.

Turning to the modifiers of the noun, the adjective and noun form a semantic whole, while the numeral



adds only cardinality, and the demonstrative designates proximity and/or identifiability. In keeping with the principle of semantic bonding, the preferred order of prenominal modifiers is ADJNUMDEM-N and the most frequent order of postnominal ones is N-ADJNUMDEM (Hawkins 1983: 119–20).

#### 4.3 Length and Complexity

The length and complexity of an element is seen to covary inversely with the ease with which its referent can be identified. Identifiability in turn correlates closely with frequency of occurrence and high topicality. Since easily accessible and topical information tends to be placed prior to less accessible material (see Sect. 2.2), by the same token shorter and less complex constituents tend to precede longer and more complex ones.

There is compelling cross-linguistic evidence for the preference to place informationally and structurally light constituents before heavy ones. The following are just a few cases in point:

- (a) the tendency for clitics to occur in second position in the utterance, known as Wackernagel's Law;
- (b) the earlier placement of pronominal as compared to nominal subjects or objects in languages such as Bimoba, Cairene Arabic, German, Grebo, Ila, Karen, Twi, and Uzbek;
- (c) the preference for final placement of sentential NPs observed in, for example, Blackfoot, Tuscarora, Kinyarwanda, Malagasy, Sherpa, Persian, Latin, and English;
- (d) the phenomena of heavy NP shift as in *Fred sent to his client several brochures with all the accommodation details* and extraposition from NP as in *I met a man last night who reminded me of you*;
- (e) the prehead vs. posthead placement of shorter as compared to longer forms of a modifier as is the case with: relative clauses in, for example, Finnish, German, and Tagalog; inflectional and prepositional genitives in several Germanic languages (e.g., *the boy's uncle* vs. *the uncle of my next-door neighbor*); and simple as opposed to complement-taking adjectives in English (e.g., *a proud man* vs. *a man proud of his son*).

#### 5. Word-order Variation

The significance attributed to the concept of basic order follows from the assumption that the basic location of functional categories will be maintained unless there are reasons to do otherwise. These reasons may involve pragmatic highlighting, the varying identifiability or salience of the constituents of the clause, or language-specific considerations such as those following from the verb-second constraint in some of the Germanic languages. Variations in order resulting from the above, typically involve major

clausal constituents rather than the elements of noun, adjective, or adpositional phrases, which on the whole display rather stable word-order characteristics.

The number and type of permissible word-order permutations at the sentence level differs from language to language. All languages appear to allow for the initial placement of at least some temporal and spatial adverbials and for the fronting of emphatic and contrastive constituents. Also common are variations in order resulting from the placement of heavy material to the right, mentioned earlier. Interestingly enough, variations in order induced by this tendency even occur in object-before-subject languages which on the whole exhibit word order preferences counter to those displayed by subject-before-object languages.

The potential variations in the positioning of the verb, its arguments, and adjuncts are not predictable from the basic order that a language displays. Linguists have, however, noted a close relationship between a language's basic syntactic order and its positional strategies for the topic and the focal part of the comment; the subject position is the most common location of the topic, and the object position the characteristic location of items in focus. Therefore certain predictions can be made in regard to the most likely placement of constituents bearing particular pragmatic functions, though not concerning the extent to which such placement is actually utilized or the range of constituents that it typically affects. For example, both English and Polish are typically classified as SVO languages, and as one would expect, in both languages the initial position is viewed as the favored location of the topic. Yet in English the placement of nonsubject topics in initial position (particularly of verbal arguments and instruments and benefactives) is highly constrained; OSV and XSV orders as in *Max I like* or *In Kuwait he was born* are unquestionably marked. Whereas in Polish the initial placement of topical objects or adjuncts occurs regularly and is conditioned by the same factors as those affecting the initialization of subjects. Needless to say, Polish sanctions much greater variation in order than English does; in fact in Polish virtually any sequence of the verb and its arguments and adjuncts is possible.

#### 6. Accounting for Word Order in Grammatical Theory

The typological classification of languages in terms of the basic location of the subject, object and verb, and the preference for modifier/head or head/modifier ordering offers only a restricted amount of information about the word-order patterns to be found in any given language. Nevertheless, it constitutes a good point of departure for theory-specific accounts of linearization. However, since most languages are not consistent in the NSP sense of the term and moreover allow for some variations on the basic order, the

formulation of linearization rules capable of capturing the full range of word-order patterns encountered in languages has so far met with comparatively little success. Most grammatical frameworks, for instance, government and binding (see *Binding*), lexical functional grammar, generalized phrase structure grammar, categorial grammar, word grammar, and relational grammar seek to provide an account only of a limited subset of word-order facts, typically those which the theories in question define as syntactic as opposed to pragmatic. And even within such reduced domains they have encountered problems, arising in the main from the failure to include an appropriately wide range of information in the specification of rules of order. For instance, the constituency-based rules of order proposed in the context of lexical functional grammar, do not allow for the inclusion of functional information, nor information pertaining to semantic roles or semantic features such as animacy or definiteness. Since the order of objects in ditransitive clauses and often also the sequencing of clitics is in many languages affected by the above factors, no adequate account of the relevant ordering can be given within the proposed system of rules. To give another example, the linear precedence rules of generalized phrase structure grammar do not make reference to the internal composition of phrases. Therefore the possibility of PP > NP order with heavy NPs in English cannot be accounted for, nor the postnominal location of adjectives taking PP complements.

The complex array of factors that affect word order cross-linguistically and the interrelationships among these factors suggest that the word-order patterns occurring in languages are best viewed not in terms of dichotomous grammaticality judgments, but in terms of a series of choices defining a preferential ranking among the set of word-order possibilities available in a given language. This needs to be

captured in any word-order rules that aspire to provide a comprehensive statement of order. Currently, ways of doing this are being elaborated, which assign a relative weighting to each of the possible orderings and specify how conflicting tendencies defining mutually exclusive linearizations are likely to be resolved within individual languages and across languages. This line of research represents the first serious attempt to integrate syntactic, semantic, and pragmatic aspects of order within specific models of grammar and therefore, in view of the far from satisfactory treatment of word order in modern grammatical theory, undoubtedly, is a step in the right direction.

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# Glossary

(A selection of terms taken from the original Glossary edited by M. G. Dareau, *University of Edinburgh*, which appeared in *The Encyclopedia of Language and Linguistics*).

The alphabetical arrangement is word by word, and hyphens are ignored.

Brackets in the entry enclose alternative terms, parts of terms or the symbol/abbreviation used for that term.

Terms in bold type refer to other entries within the glossary or provide other related usages.

## Abbreviations

esp.	especially
freq.	frequently
Gmc	Germanic
ME	Middle English
med.	medieval
mod.	modern
OE	Old English
OF	Old French
orig.	originally
specif.	specifically
trad.	traditionally
transf.	transferred

## A = adjective, adverbial, argument

**abessive** In **inflecting** and **agglutinating languages**, e.g., Finnish, the **case** denoting lack of accompaniment, 'without.'

**ablative** In **inflecting** and **agglutinating languages**, the **case** expressing **locative** and **instrumental** meanings, separation, origin, etc.; equivalent to prepositions 'by', 'with,' 'from.'

**ablative absolute** A type of **absolute construction** (see **absolute clause**) found in some **inflecting** and **agglutinating languages**, e.g., Latin, specif. a phrase consisting of a noun in the ablative case and a modifier, usu, a particle in agreement with it, e.g., **Regibus exactis, consules creati sunt** (Kings having been abolished, consuls were elected).

**absolute clause (phrase, construction)** A non-finite adverbial clause or other adverbial construction not linked syntactically to the main clause, e.g., **Other things being equal, we leave at nine. However, the train was late, Cf. ablative absolute.**

**absolute universal** A **universal** which characterizes all languages without exception, e.g., every language has nouns. Cf. **relative universal**.

**absolutive** Said of the object of a transitive verb and the subject of an intransitive verb in an **ergative** language, e.g., Eskimo, which display the same case.

**abstract** Describes a **noun** which denotes a quality or state, e.g., *domesticity, poetry*, (Contrasts with **concrete**

**acceptability** The possibility or normality of an utterance, usage, etc., in a language as judged by a native speaker; in generative grammar, the acceptability of an utterance is seen as a matter of performance (contrasting with **grammaticality** which is a matter of competence. (**Unacceptable** examples are indicated by a preceding asterisk.)

**accessibility hierarchy** The hierarchical ordering of the grammatical relations **subject**, **direct object**, **indirect object**, etc., with regard to the syntactic processes, e.g., relativization, they take part in; postulated as a linguistic **universal**.

**accidence** The part of a grammar dealing with **inflections**.

**accidentalization** The process of integrating a **lexical item** into an inflectional **paradigm**.

**accusative, objective 1** In **inflecting** and **agglutinating languages**, the **case** of the noun when it is the object of a verb; trad. applied to the object in English (the inflected pronominal forms *him, her*, etc., are now usually said to be in the **objective** case). **2** Said of a language in which the objects of transitive and intransitive verbs are treated alike. (Contrasts with **ergative 1**.)

**actant** also (**verb**) elaborator In valency grammar, a functional unit determined by the **valency** of the verb, e.g., subject, direct or indirect object, essential adverbial, etc. (Contrasts with **circumstantial**.)

**action 1 activity** Something which happens under the control of an **agent** or **actor**, trad. also used of events or processes not attributable to an agent. **2** Descriptive of what a **verb** 'does', freq. in the phrase 'the action of the verb'. **3 verb of action** see **dynamic (verb)**

**active** In the analysis of **voice**, a sentence or clause in which the **subject** is also the **actor**, e.g., *Mary drove the*

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*car*; the verb form in such a sentence or clause. (Contrasts with **passive**.) See also **middle voice**.

**activity** A type of action, a process that occurs under the control of an agent or actor, e.g., *John runs every day*.

**actor** 1 The entity which puts into effect the action of the verb, sometimes equated with the **subject** of a sentence, e.g., *Susan ate the cake*. Cf. **agent**. 2 In role and reference grammar, the primitive **macro-role** which expresses the participant which instigates, performs, controls the action or situation. (Contrasts with **undergoer**.)

**actor-action-goal** The sentence pattern typical of statements in many languages, e.g., in *Ivor took a book*, *Ivor* is the **actor**, *took* the **action** (sense 1) and *book* the **goal** (see **patient**).

**adessive** In inflecting and agglutinating languages, the case expressing the meaning 'on' a place.

**ADJ = adjective**

**adjectival (adjective) phrase** A phrase which functions like an adjective.

**adjectivalization** The process of transforming a predicative structure into an attributive adjective or adjectival phrase or clause, e.g., *laughing jackass* < *The jackass is laughing*.

**adjective (adj, ADJ, A)** A member of the word class whose main function is to specify an attribute of a noun, e.g., *a fat cat*, *The cat is fat*, in many languages displaying contrasts of degree: *fat, fatter, fattest*.

**adjunct** 1 An optional element in a grammatical construction which may be added or omitted without any consequent syntactic change, e.g., *She came home afterwards*; *They went for a walk in the park*. 2 In x-bar syntax, one of the functional categories, beside specifiers and **complements**, including attributive adjectives, adverbials, etc.; they are always optional. 3 In Quirkian linguistics, adverbials which are to some extent integrated into the clause structure, e.g., as the focus of a cleft sentence an adjunct functions as it were a noun: *John recognized Alfie by his laugh* may be expressed as *It was John that recognized Alfie by his laugh* or *It was by his laugh that John recognized Alfie*. (Contrasts with **conjunct** 1, **disjunct** and **subjunct**.)

**adnominal** Any element in a noun phrase which modifies a noun as an adverbial modifies a verb, e.g., *a big cat*, *a cat in a hat*, *Jane's cat*.

**adposition** A **preposition** or **postposition** which typically takes a noun phrase complement.

**ADV = adverb, adverbial**

**adverb, (adv, ADV)** A member of the word class whose main function is to specify the mode of action of a verb, e.g., *She ate quickly*; other functions include sentence connector, e.g., *Besides, it's blue*, and intensifier, e.g., *very good*

**adverbial, (ADV, A)** An element of clause structure functioning like an adverb, said esp. of phrases or clauses, e.g., *He telephoned at once / last year / when he got home*.

**adverbial clause** A clause which functions like an adverb to express various relationships.

**adverb(ial) phrase** A phrase which functions like an adverb; a phrase with an adverb as its head, e.g., *very quickly*.

**adversative** Describes a construction which expresses an unfavorable or antithetical effect or circumstance, e.g., *but* is an adversative conjunction.

**affected** Describes the **participant role** of the direct object, being the entity usually affected by the action of the verb (Contrasts with **agentive** 3, **recipient**.)

**affective (attitudinal, emotive, expressive) meaning** The element of meaning that expresses emotion, attitude, etc., e.g., anger, boredom, connotative (see **connotation**) as opposed to denotative (see **denotation**) meaning.

**affirmative, positive** Said of a sentence or verb which is not negative (see **negation**) i.e., which expresses an assertion, e.g., *It is raining*.

**affix** 1 A **formative** capable of being added to a **root** or **stem** to make a more complex word, e.g., *unfriendly*. See also **circumfix**, **infix**, **prefix**, **suffix**. 2 In generative grammar, the term has been extended to include present and past tense markers, *-ing, be, have*, etc.

**affixing language** A language which expresses grammatical relations mainly through the use of affixes, e.g., Latin. Cf. **inflecting** and **agglutinating languages**.

**agent(ive)** 1 A clause element whose function is to specify the means whereby an action, etc., comes about, e.g., in the passive the **agent** is the nominal, etc., occurring in the 'by' phrase: *The cake was eaten by the dog*. 2 In case grammar and government and binding theory, one of a fixed set of 'semantic cases' or **theta roles** (along with **dative**, **objective**, etc.). 3 The **participant role** typically of the subject, the instigator of what is denoted by the verb. (Contrasts with **affected**, **recipient**.)

**agglutinating language** A language in which words are made up of a sequence of morphs, each expressing a separate item of meaning as, number, person, tense, etc. Cf. **inflecting language**, **isolating language**.

**agnation** The relation between different **realizations** which share a basic core denoting an event and its participants, e.g., *The cat chewed the aspidistra*, *It was the cat that chewed the aspidistra*, *The aspidistra was chewed by the cat* are **agnates** sharing the core information of a cat, an aspidistra, and the action of chewing.

**agreement also concord** A formal relationship in which the form of one element requires a corresponding



form in another, e.g., between subject and verb: *The cat sits, the cats sit.*

**Aktionsart** A term applied to various distinctions lexical and grammatical, in the types of actions, etc. denoted by verbs, sometimes equated, more or less, with **aspect**.

**(alethic) modality** That variety of **modality** describing the necessary or contingent truth of propositions, e.g., where *He must be on this train* means 'It is not possible that he is not on this train.' Cf. **deontic modality** and **epistemic modality**.

**alienable** Describes a type of possessive where the item possessed is so in a nonessential or temporary fashion, e.g., *the girl's hat* vs *the girl's hair*, which is **inalienable**.

**allative** In **inflecting** and **agglutinating languages** the **case** expressing the meaning of motion 'to' or 'towards' a place.

**allo-** Refers to the non-distinctive realizations of a linguistic unit, e.g., allophone, **allomorph**, etc.

**allomorph** One of a number of alternative realizations of a morpheme which are, e.g., conditioned by their phonetic environment, as in the case of the plural morpheme in English, realized by the allomorphs /s/, /z/ and /iz/.

**alternant** see **alternation**

**alternation** The relationship between variant forms of any sort. The forms or **alternants** freq. vary predictably, e.g., *girl* ~ *girls*, *profound* ~ *profundity* or not, e.g., *go* ~ *went*.

**ambient clause** A **clause** which refers to the weather or environment, e.g., *It is cold*.

**ambiguity** Said of a word, phrase, etc., which has two or more meanings leading to the necessity for more than one lexical or grammatical analysis.

**ambivalent** Describes a verb whose valency can be expressed according to two or more different valency schemata, e.g., *Mary killed Bob* can be described either as **operative** or **factive**.

**analogy** The process whereby irregular forms are changed to accord with regular patterns, e.g., the child's form *comed* (for *came*) or *mouses* (for *mice*).

**analytic** Describes a sentence whose truth or falsity is dependent entirely on the meanings of its constituent terms, e.g., *Bachelors are unmarried men*.

**analytic language** = **isolating language**

**anaphora** 1 Reference back to something previously expressed, as by use of a pronoun or pro-verb, e.g., *John went home, he really did that.* (Contrasts with **cataphora**.) 2 The repetition of a word at the beginning of successive sentences, clauses, verses, etc.

**animate** A feature of nouns whose reference is to living things. (Contrasts with **inanimate** which refers to objects or concepts.)

**antecedent** A word, phrase, etc. referred to by a pronoun, etc. occurring later in the text, e.g., *The hat he wore is this one.*

**antipassive** In **ergative languages**, the functional equivalent of the **passive** in non-ergative languages.

**antonymy, contrary (term)** A meaning relation of oppositeness, freq. used specif. where the difference is one of degree, e.g., *tall/short, up/down*. Cf. **complementarity**, **converseness**, **gradability** 2. (Contrasts with **synonymy**.)

**aorist** In some **inflecting languages**, the **aspect** of the verb denoting an action without reference to completion, duration, or repetition. (Contrasts with **imperfect** and **perfect**.)

**apodosis** The consequence or result expressed in the main clause in a conditional sentence, e.g., *If I come he must go*. Cf. **protasis**.

**apposition** Two or more noun phrases having the same referent and standing in the same syntactical relation to the rest of the sentence, e.g., *Dylan Thomas, poet, playwright, drunk*.

**arbitrariness** 1 The lack of physical correspondence between linguistic forms and their referents in the real world. 2 In **saussurean linguistics**, the conventional nature of the relationship between sign and signified is termed arbitrary. (Contrasts with **iconicity**).

**argument (A)** 1 An independent variable upon whose value that of a **function** depends. e.g.,  $x, y$  or  $z$  in  $x \cdot y + z$ . 2 In **generative grammar** and **case grammar**, a position filled by a noun or noun phrase within a sentence or noun phrase, i.e., a subject, direct object, etc. 3 In **government and binding theory**, the expressions within a linguistic structure that receive **theta roles**

**argument slot** In **case grammar**, the possible positions of noun phrases (or **arguments**) in a sentence (or **proposition**), labeled or identified according to their semantic relationships with the verb phrase (or predicate word).

**arity** = **valency**

**arrangement** A sequence of linguistic elements according to their relative position or distribution, the possible combinations of phonemes within words, words within sentences, etc.

**article** A **determiner** which differentiates nouns according to their definiteness: *the* is the **definite article** in English, *a(n)* the **indefinite**.

**aspect** A category of description referring to the way in which the performance of an action, esp. its duration or completion, is denoted by the verb, e.g., *I am going* / *I go*. Other possible aspectual distinctions include **attenuative**, **habitual**, **inceptive**, **iterative**, **mutative**, **progressive**, **resultative**, etc. Cf. **Aktionsart**.

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**aspectualizer** In generative grammar, a **formative** indicating **aspect**.

**assertive** Used to describe collectively the grouping of adjective, pronoun and adverb, *some, somebody, something, sometimes*. (Contrasts with the **non-assertive** *any, anybody, anything, ever* and the **negative** *no, nobody, nothing, never*.)

**atelic** A type of **aspect** where the activity described has no clear end point e.g., *look, play, sing*. (Contrasts with **telic**.)

**attenuative** A type of **aspect** or **Aktionsart** with quantitative meaning, e.g., Hungarian *olvas* (read) > *olvasgat* (read a little).

**attributive** Describes an adjective or other modifier when it occurs within the noun phrase, e.g., *the red nose, city streets, never to be forgotten occasion* (Contrasts with or, in some approaches, is viewed as including **predicative**.)

**attributive meaning** Meaning is attributive when it identifies as a particular individual (person or thing) the entity to which it is applied, e.g., in *I spoke to the sergeant, the sergeant* is attributive if an individual. John Scott, is intended.

**augmentative** An affix with the sense implication 'large', e.g., *megadose*. (Contrasts with **diminutive**)

**auxiliary (verb), (Aux)** A non-lexical verb used in conjunction with a **lexical verb** to make distinctions of aspect, mood, voice, etc., e.g., *We are going, I can/may/shall come*. Cf. **semi-auxiliary**.

**avalent** see **valency**.

**axiom, postulate** One of the set of basic propositions which a linguistic theory assumes to be true and from which the rest of the grammar may be deduced.

**bar** In x-bar syntax, a syntactic category; specif. **zero-bar** categories are word-level categories, single bar and double bar, phrase-level. Further specifications can be indicated as A-bar.

**base** = **root** or **stem**.

**basic-form** The member of a paradigm regarded as basic, of which, e.g., the plural, feminine, etc. are variants, e.g., *man ~ men god ~ goddess*. Cf. **underlying form 1**.

**benefactive** In analysis in terms of **participant roles**, the entity benefiting from an action, e.g., *you* in *I have a present for you*.

**biconditional** = **equivalence 2**

**binary 1** also **boolean** Describes classifications in terms of mutually exclusive alternatives ( $\pm$ ), i.e., the presence or absence of any particular **feature**, e.g., [ $\pm$  velar]. **2** Describes a number system with two elements, 0 and 1.

**binary feature** A **feature** classifying linguistic units in terms of mutually exclusive pairs ( $\pm$  nasal). [ $\pm$  animate]. (Contrasts with **unary feature**, **multivalued feature**.)

**binding theory** The theory which sets out the conditions which direct the formal relations among the elements of a sentence, esp. in determining the positions of noun phrases and their **coindexation** (see **co-indexing**).

**bivalent** see **valency**

**boulomaic modality** The variety of **modality** concerned with a person's wishes, e.g., *where Hector may come to tea* expresses the speaker's desire that Hector should come.

**bound** Describes a **morpheme** which is not able to function independently as a separate word, e.g., an affix: *re-*, *-ed*, etc. (Contrasts with **free**).

**bounder** A morpheme, e.g., the verb **particle** in English phrasal verbs, which indicates the end-point of a movement or end-state of a process, as, *eat up, burn down*. Cf. **telicity**.

**bracketing** A means of displaying linearly (as in mathematics, etc.) the structure of a string of elements, e.g., [*the lady*] [*wore*] [*a red hat*] (a) parentheses ( ) enclose optional elements, e.g., D(Adj)N = DN or DAdjN; (b) braces { } enclose alternatives, e.g., D{<sup>Adj</sup>N}N = DAdjN; or DNN; (c) square brackets [ ] require horizontal matching, e.g., [<sub>A</sub>] → [<sub>S</sub>] = A → C and B → D. Square brackets [ ] are used to enclose features, e.g. [ $\pm$  count].

**branching** The linear connections in a **tree (diagram)**.

**C** = **complementizer**

**c-command, constituent command** The relationship between an element in a phrase-marker and those elements with which it shares a dominating node, i.e., A c-commands B if and only if the node dominating A also dominates B, and A does not dominate B or B A.

**case 1** In **inflecting** and **agglutinating languages**, the inflectional forms of the noun, pronoun or adjective used to identify syntactic relationships within the sentence, e.g., the **nominative** case identifies the **subject**, the **accusative** the **object**, the **genitive** the relation of possession, etc. **2** In case theory, a sub-theory of government and binding theory, the inflectional categories (nominative, accusative, Genitive and Oblique) assigned to all NPs (noun phrases). **3** The corresponding grammatical relationships in non-inflecting languages to those signaled by relationships of case in **inflecting languages**.

**case frame** In case grammar, the array of **cases** specifying the structural context for verbs.

**case grammar** A **grammar** (sense 3) based on the assumption that semantic functions are at least relevant and probably basic to the expression of syntactic generalizations.

**case phrase** In case grammar, a noun phrase plus an indicator of the **case** to which the noun phrase belongs and which becomes in the surface structure subject, object or adjunct.

**case relation** In case grammar, the semantic functions basic to the lexicon or syntax, e.g., **agentive**, neutral, instrumental, etc.

**category 1** Any 'class' or group of linguistic elements recognized in the description of a language, e.g., phoneme, noun etc. **2** = **part of speech** **3** Restricted to features associated with parts of speech, e.g., mood, tense, person, etc.

**catenative** Describes a lexical verb which governs another non-finite lexical verb, e.g., *He loves to swim*, *She needs to eat*.

**causal clause** A variety of **adverbial clause** expressing the reason for something, e.g., *Because the bus was late they missed the first act*.

**causative** A class of verbs incorporating the notion of causality in their (lexical) meaning, e.g., *lay* is the causative of *lie*, *kill* of *die*, etc. Cf. **factitive**.

**checking (reversed polarity) tag** A tag-question which reverses the positive or negative status of the main clause verb, having the purpose of checking or confirming the question, e.g., *He has gone, hasn't he?* (Contrasts with **copy tag**.)

**circumstantial, free modifier** In valency grammar, a non-essential dependent, e.g., adjunct, modifier. (Contrasts with **actant 1**)

**circumfix** A type of complex **affix** consisting of both a **prefix** and a **suffix** functioning together, e.g., Dutch *het gebeente* (skeleton) < *het been* (bone).

**circumstantial modality** The variety of **modality** describing a situation where something may be true according to the circumstances, e.g., *In Venice one must travel by boat*.

**class** A set of words, morphemes, etc. which have properties in common, see specif. **form class**, **word class**.

**classification** The ordering taxonomically of meaningful entities, e.g., morphemes, etc.

**classifier 1** A morpheme functioning to indicate the **class** to which a word belongs, e.g., in French, *-eau* and *-elle* are gender classifiers, as in *beau* and *belle*, in English *-ly* distinguishes adverbs, as in *really*. **2** A word in various languages, e.g., Mandarin Chinese, Tzeltal, used to characterize entities as being of a particular sort, e.g., as 'human', 'plant', 'flat', etc., in transf. use, a means of analyzing various aspects of the semantic structure of nouns in non-classifier languages, specif. see **sortality**.

**clause 1** A syntactic unit consisting of subject and predicate which alone forms a **simple sentence** and in combination with others forms a **compound sentence** or **complex sentence**. See also **adverbial clause**, **main clause**, **noun clause**, **relative clause**, **subordinate clause**. **2** In modern grammars, sometimes expressed as a unit larger than a phrase but smaller than a sentence, to account for clauses which fall outside the traditional 'subject, predicate' pattern. See also **wh-clause**, **that-clause**, **small clause**.

**clause chaining language** A language in which clauses are combined in such a way as to blur the distinction between **coordination** and **subordination**.

**clause object** A clause functioning as **object**. See also **simple object**.

**cleft sentence** A sentence in which a particular emphasis or focus is achieved by splitting a simple sentence into two clauses, e.g., *Mary wore a red hat* → *It was Mary who wore a red hat* or *It was a red hat which Mary wore*.

**clefting, theme predication** The process described at **cleft sentence**.

**clitic** A word or form dependent on the preceding or following word, respectively, **enclitic**, e.g., English *the*, *a*, French *je*, *j'*, and **proclitic**, e.g., English *n't* in *can't*, etc.

**closed (finite) class** A class whose members can (at least in theory) be listed, e.g., the class of articles in English or cases of the noun in Finnish.

**cognate object** An object closely related derivationally or semantically to the verb which governs it, e.g., *to dream dreams*, *to die the death*, *to run a race*.

**cognitive** (descriptive, conceptual, referential) meaning Meaning of a denotative or propositional sort, objectively or intellectually verifiable. (Contrasts with **affective meaning**.)

**cohesion** The ability of some linguistic constructions to bind together in units larger than the word, e.g., article + noun, or lexical means of linking sentences into larger units, paragraphs, chapters, etc., e.g., by **anaphora**: *The girl went out. She shut the door*.

**cohesiveness, cohesion** The integrity or uninterruptedness of the word, i.e., new material may not be intruded into a word (*abso-blooming-lutely* being the exception that proves the rule).

**coindexing, coindexation** The process of marking the identity of constituents by using subscript letters or numbers, as, e.g., *I<sub>1</sub> said I<sub>1</sub> could come*, or *He<sub>1</sub> said he<sub>1</sub> could come* but *John said Alan could come: He<sub>1</sub> said he<sub>2</sub> could come*.

**collective noun** A noun denoting some entity made up of a collection of parts seen at any particular time as individual parts acting separately or as a combination acting as one, and taking, respectively, a plural or

## Glossary

singular verb, e.g., *The crowd were dispersing; Parliament is in session.*

**colligation** The occurrence of groupings among words according to the sorts of grammatical relations they enter into; the ordering of words on this basis, e.g., *enjoy* belongs to the group of verbs taking the *-ing* form of the verb: *I enjoy fishing*; whereas *agree* takes the infinitive: *I agree to fish*.

**collocation** The habitual cooccurrence of particular lexical items, sometimes purely formally, e.g., *eke out*; sometimes with some semantic implication, e.g., *slim chance*.

**combinatorial** Relating to the property of linguistic units combining into more complex units.

**comitative** In **inflecting** and **agglutinating languages**, the case expressing the meaning 'along with'.

**command** 1 In the classification of sentences in terms of **function**, a sentence which conveys an order, in **form**, typically, an **imperative sentence**. (Contrasts with **exclamation**, **question**, **statement**.) 2 see **c-command**.

**comment** The part of a sentence which says something about the **topic** of the sentence, e.g., *His spectacles were on his head*.

**comment clause** A comment added, often parenthetically, to another clause, e.g., *The answer, you know, is in the soil; To be honest, I don't believe it*.

**commissive** In the theory of speech acts, describes an utterance conveying a promise or commitment, e.g., *I promise ... , I assure you ...*

**commitment** In the theory of speech acts, obligation arising from a speech act undertaken.

**common** Applying to the unmarked form of a grammatical category (as in **common case**, in English contrasting with the **genitive**, the only marked case).

**common noun** A noun denoting a class of objects, places, etc., e.g., *the boy, the cottage*. (Contrasts with **proper noun**.)

**Comp or COMP = complementizer**

**comparative (comp)** The degree of comparison of two entities expressed formally as, e.g., *louder, more astonishing* vs *loud, astonishing*.

**comparator** A modal (see **modality** 2) expression which refers to what might have happened in comparison with what has happened.

**comparison = degree**

**complement (comp)** 1 An element in a clause which completes the action indicated by the verbs *be/seem/become* and **intransitive verbs**, e.g., *John was/seemed/became/fell ill, John was/became a violinist*. These are **subject complements** referring to the same entity as the subject. 2 In some theories, any obligatory element in the predicate excluding the verb, e.g., *She ate a banana*,

*She went home to Stockholm*. 3 An **object complement** makes reference to a direct object, completing the action of a **transitive verb**, e.g., *She called the man a liar*. 4 Sometimes applied to categories other than the verb, e.g., the *of* phrase in *Spirit of St Louis* may be termed the complement of *spirit*.

**complement clause** 1 A clause following the verb *be*, e.g., *This is what I want*. 2 In some views, any **subordinate clause**.

**complementarity** The type of oppositeness in meaning where the assertion of one denies the other, such differences are **complementary** or **contradictory**, e.g., *dead/alive*. Cf, **anonymy**, **converseness**.

**complementizer (Comp, COMP, C)** A subordinating conjunction marking an embedded sentence of complement type, e.g., *I said that he was nice*.

**completive** An aspect of the verb which focuses on the completion of an action or the concluding phase of a process. (Contrasts with **habitual**, **perfective (imperfective, progressive)**).

**complex** Of a linguistic unit, involving more than the simplest or most basic construction.

**complex noun phrase (NP)** A noun phrase including a clause functioning as complement or adjunct, e.g., *The hat that she wore was red*.

**complex sentence** A sentence consisting of 1 a main clause and one or more subordinate clauses, 2 more than one clause. (Contrasts with **compound sentence**, **simple sentence**.)

**complex word** A word comprising one free and at least one bound **morpheme**, e.g., *disestablishment* (*dis* + *establish* + *ment*).

**compositional** The meaning of a phrase, etc., composed of the meanings of its constituent parts.

**compound noun** A noun made up of at least two free morphemes, e.g., *bedroom, hatstand*.

**compound sentence** A sentence composed of two or more main clauses. Cf. **complex sentence** 2. (Contrasts with **complex sentence**, **simple sentence**.)

**conative** Describes language as used to elicit a reaction in the addressee in accordance with the desires of the speaker, e.g., commands.

**concatenation** The linking together of linguistic elements to form strings in linear succession, e.g.,  $N + V$  +  $N$  or  $N^*V^*N$ .

**concessive (clause)** A variety of **adverbial clause** expressing concession, e.g., *She went although she was ill*.

**concord = agreement**

**concrete** Describes a **noun** which denotes a real or physical entity, e.g., *cat, house, poem*. (Contrasts with **abstract**.)



**conditional 1** Of a **sentence** or **clause**, expressing a hypothesis, typically contained in an *if*-clause (the **protasis**), or the conditions whereby what is expressed in the main clause (the **apodosis**) may be valid, e.g., *If it rains I shall go home*, *If it had rained I would have gone home*. See also **adverbial clause**. **2** Of tense, the tense used to express an unreal or unfulfilled condition (as in the second example above), now treated under **aspect** or **mood**. Some languages distinguish real and unreal conditions by a particular mood or other form of the verb, e.g., French, or by different conjunctions, e.g., Arabic.

**configuration** An identifiable **arrangement** of elements.

**configurational languages** Languages in which the word order is (relatively) fixed and the constituent structure hierarchical, e.g., English.

**CONJ = conjunction**

**conjugation** In **inflecting** and **agglutinating languages**, the set of verbs that vary according to the same model of formation or **paradigm**.

**conjunction (CONJ)** **1** One of the class of words whose main function is to connect clauses, phrases or words; trad. **coordinating conjunctions** e.g., *and*, *but*; and **subordinating conjunctions**, e.g., *that*, *when*. **2** The **logical connective** standing for the operation of conjoining and the complex proposition thereby produced, e.g., '*p* and *q*' or *p*  $\wedge$  *q*.

**connective** A word whose main function is to link linguistic units, chiefly a conjunction or adverb, e.g., *and*, *but*, *however*, *nonetheless*, also, copula verbs, such as *be*, *seem*.

**consecutive clause** A variety of **adverbial clause** expressing consequence or result, e.g., *The bus took so long that they were late*.

**constative** In the theory of speech acts, describes a descriptive statement capable of being analyzed in terms of **truth values**, i.e., it is true or false, e.g., *The sky is blue*. (contrasts with **performative**.)

**constituent** A linguistic **unit** (sense **1**) which is a component of a larger linguistic construction (as, a word of a phrase, a phrase of a clause, etc).

**constituent analysis** The analysis of a sentence, etc. into constituents, hierarchically arranged as immediate constituents (ICs), the major divisions, e.g., [[the visitor][has arrived]] and ultimate constituents (UCs), the smallest divisions possible on the syntactic level, e.g., [[the] [visit[-or]]][[has] [arrive[-ed]]]. This can also be displayed in a **tree diagram**.

**constituent structure** The structure of a sentence, etc., as represented in a tree diagram or by bracketing, displaying the grammatical relationships of the constituents.

**construction** The syntactic arrangement or patterning within a grammatical unit

**construe** To analyze a **construction** (sense **1**) in terms of its syntactic relationships.

**contact clause** A relative clause where the relative pronoun is omitted, e.g., *the hat she wore* (as against *the hat that she wore*).

**content** The lexical meaning of an utterance or text, esp. in opposition to its **form**.

**contentive, content word = lexical word**

**context 1** The stretch of utterance or text in which a linguistic element occurs, e.g., in [pin], [p] and [n] are the phonetic context off[i]. **2** The discourse around a word or expression which clarifies its meaning in that environment, e.g., in *Even foxes have holes in which to lay their heads*, *holes* may be identified as meaning 'lair'. **3** The extralinguistic setting of an utterance or the non-linguistic information contributing to the meaning, e.g., in the above example, the fact that the reference is biblical.

**continuous = progressive**

**control theory** The means whereby the referential identity of the main clause subject or object and the subject of an embedded infinitive clause (**PRO**) is ensured after different lexical verbs, e.g., after *promise* the main clause subject determines the reference of **PRO**, after *persuade*, the main clause object, e.g., *I<sub>1</sub> promised Gloria PRO<sub>1</sub>, to buy it, I persuaded Gloria<sub>2</sub> PRO<sub>2</sub> to buy it*.

**controller 1** In **control theory**, the antecedent noun phrase which has the same reference as the subject of a following embedded infinitive clause (**PRO**). **2 = governor 2**.

**cooccurrence** Refers to any permitted syntagmatic combination of units, e.g., *a baby* but *\*a butter*; *eke out* but *\*eke in*; *feed the cat*, but *\*fall the cat*.

**cooperative principle** In the theory of speech acts, the overriding principle that the participants in a conversation intend to cooperate with their fellow-participants, i.e., they are telling the truth, attempting to be relevant, etc.

**coordinate clause** One of a number of clauses linked by **coordinating conjunctions**, e.g., *Boys danced and girls sang*.

**coordinating conjunction, coordinator, (CONJ)** A conjunction used in **coordination**, e.g., *and*, *or*, *but*, etc.

**coordination** The linking of linguistic units of the same syntactic status, e.g., *John and Mary*; *tired but happy*, *to go home or stay away*, etc. See also **coordinate clauses**.

**copula, linking verb** A verb with very little independent meaning, used to link subject and complement and serve as the vehicle for tense, etc., e.g., in English, *be*, *seem*, *become*.

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**copy tag** A **tag question** which copies the positive or negative status of the main clause, acting to question what is being said, e.g., *You like this, do you?*. (Contrasts with **checking tag**.)

**coreference** Identity of reference between two (or more) constituents of a sentence, e.g., *I said I knew*. Cf. **coindexing**.

**count(able) noun** A noun denoting a separate entity, one of a number of such entities which can be counted, e.g., *an apple, many ducks, three pineapples*. (Contrasts with **mass noun**.)

**counter-agent** In case grammar, the resistance or force against which an action is carried out.

**counter-factual** An unfulfilled condition (see **conditional**) referring to a hypothetical situation, e.g., *If I had eaten it I would have been ill*.

**covert** Of a grammatical relationship that is not apparent in the surface structure as, e.g., that between active and passive sentences.

**cumulative** A type of **aspect** or **Aktionsart** in which the action expresses an accumulation, e.g., Russian *ezdit'* (drive) > *naezdit'* (*sto kilometrov*) (obtain a mileage of (100 km)).

**dangling participle** = **unattached clause**

**dative 1** In **inflecting** and **agglutinating languages**, the case expressing the relationship of **indirect object** or the meanings *to* or *for*. **2** also **experiencer** In case grammar, the case of an entity or person affected by the action or state of the verb, e.g., *the dog caught the rat*.

**declaration** In the theory of speech acts, an utterance which initiates a new situation in the external world, e.g., *I resign*.

**declarative** The sentence type or verb typically used in making a statement, e.g., *John is arriving at three*. Cf. **imperative, interrogative, indicative**.

**declension** A set of nouns, pronouns, or adjectives which have the same inflections, Cf. **decline**.

**decline** To state in a prescribed order the inflected forms of a noun, pronoun or adjective. Cf. **declension**.

**deep structure (grammar), remote structure** The abstract representation of a sentence specifying the syntactic facts which govern how the sentence is to be interpreted, disambiguating, e.g., *Flying planes can be dangerous* as between *planes which fly* and *the flying of planes*; or assigning the same underlying form to, e.g., active and passive sentences such as *John loves Mary* and *Mary is loved by John*. Cf. **surface structure**.

**defective** Describes a word which lacks its full set of inflectional forms, e.g., Latin verbs *coepi, memini*.

**defining relative** = **restrictive relative**

**definite article** see **article**.

**definite description** A noun phrase commonly with a definite article or indexical (see **index**), purportedly identifying an individual referent, e.g., *the first President of Zimbabwe, that pencil*.

**definiteness** A feature characterizing nouns or noun phrases which refer to (specific, identifiable) entities, usu. accompanied by the **definite article** (see **article**). e.g., *the boy, the black cat*. (Contrasts with **indefinite** entities, freq. accompanied by the **indefinite article** (see **article**), e.g., *a boy, any boy*.)

**degree 1** A grammatical category specifying the level of comparison of an adjective or adverb, specif. **positive, comparative, and superlative**, e.g., *hot, hotter, hottest*, also **equative**, e.g., *as hot as*. **2** also **comparison** A variety of **adverbial clause**, e.g., *She eats almost as quickly as you do*.

**deixis, indexicality** The linguistic category concerned with the grammatical features that relate an utterance to its particular situation as regards time, location, etc. as expressed in **deictic** or **exophoric** terms, e.g., *here, now, we, these*, etc.

**delimitative** A type of **aspect** or **Aktionsart** which limits the duration of the action expressed by the verb, e.g., Russian *sidet'* (sit) > *posidet'* (sit for a little while).

**demonstrative (adjective, pronoun)** An adjective or pronoun which serves to distinguish between members of a class, specif. *this (these), that (those)*, e.g., *This rose not that one, or these if you prefer. No I'll have those*.

**denotation 1** also **reference** The relationship holding between a linguistic form, a word, etc. and some entity, event, etc. outside the language system in the real world, e.g., *cat* **denotes** the class of cats or an individual cat; *walk* denotes a particular means of locomotion. See also **cognitive meaning, reference 2. 2 = referent**.

**denotatum** The class of entities, properties, etc. referred to by a linguistic expression, e.g., the class of cats (felines, animals, etc.) is (part of) the **denotation** of 'cat'.

**deontic modality** That variety of **modality** concerned with obligation and permission, e.g., where *He must be on this train* means 'he is under an obligation to be on this train.' Cf. **alethic modality** and **epistemic modality**.

**dependency grammar** A formal grammar in which grammatical relations are explained in terms of dependencies, e.g., syntactic structures are represented by dependency trees or sets of nodes whose interconnections specify structural relations, i.e., a **governor** controls its **dependents** by **dependency rules** which specify the correct structural relations for each class of unit.

**dependent** see **dependency grammar**, **interrogative 2**.

**dependent clause** = **subordinate clause**

**deponent verb** In some **inflecting** and **agglutinating languages**, a verb which is passive in form but has an active meaning, e.g., Latin *liquitur* 'he is speaking.'

**derivational morphology** (The study of) the process of word-formation whereby new words are created by the addition of an affix to an already existing word, e.g., *rare/rarity*; *arrange/arrangement*. (Contrasts with **inflectional morphology**.)

**desiderative** The inflectional **mood**, which expresses needs, desires or wants. Cf. **optative**, also **indicative**, **imperative**, etc.

**determiner** (**det**, **DET**, **D**) A sub-class of modifiers co-occurring with nouns and pronouns to express semantic contrasts such as number or quantity, e.g., specifying count or mass nouns; specif. the articles *a/the*, also items which occur in 'article position' in the noun phrase, e.g., *some, every, much, this*, etc. In some approaches the term is extended to cover other sorts of modifier.

**diminutive** An affix with the sense implication 'little', e.g., *-let* as in *notelet*. (Contrasts with **augmentative**.)

**direct object** (**DO**) A noun or its equivalent on or towards which the action of a transitive verb is directed, e.g., *My daughter eats eggs*, freq., with active verbs, **patient** of the verb; in **inflecting** and **agglutinating languages** taking the **accusative case**. Cf. **indirect object**.

**direct question** see **direct speech**.

**direct speech**, **oratio recta** A quotation of the actual words spoken by a speaker, usu. indicated by **quotation marks**, e.g., *'I'm off' he said. 'Where are you going?' I asked.* (Contrasts with **indirect (reported) speech**, **indirect question**.)

**directive** In the theory of speech acts, an utterance in which the speaker tries to get the listener to do something, e.g., commands, requests, etc. e.g., *Get me a sandwich; Would you close the door?*

**discontinuity** The splitting of some grammatical constituents, as phrasal verbs, e.g., *eat up*, in *Eat your dinner up*; negative particles, e.g., French *ne ... pas*; the question form of the verb, e.g., *Are you laughing at me?*, etc.

**disjunction 1** A logical connective or complex sentence consisting of an either/or relationship which is true (a) when either one or both of its constituent propositions are true = inclusive disjunction, e.g., *p or q / p v q: Either they have been delayed or have got lost, either or both could be true*, (b) when only one of its constituent propositions is true = exclusive disjunction, e.g., *p or q / p w q: For us to meet either you must come here or I must go there, one or the other but not both can be true*. **2** A relationship of contrast or comparison, signaled by **disjunctives** such as *but, or*.

**dispositional modality** The variety of **modality** which expresses an agent's disposition or nature, e.g., where *Ferdinand must walk each day* means that it is Ferdinand's disposition to take a daily walk.

**distribution** The set of linguistic environments in which a linguistic unit can occur.

**distributive** A type of **aspect** or **Aktionsart** in which the action is distributed in some respect, e.g., *They each had some*; Hungarian *jár (go) > végigjár (go to each one of a set)*.

**ditransitive (three-place) verb** A **transitive verb** which takes two objects, e.g., *She gave the cat some milk*. Cf. **indirect object**.

**dual(ity)** A contrast of **number** in some languages, referring to 'two'. (Contrasts with **plural(ity)**, **singular(ity)**, **trial(ity)**.)

**durative** A type of **aspect** which expresses the occurrence of an event over a period of time. (Contrasts with **punctual**.) Cf. **progressive**.

**dynamic (verb)** In classifying **aspect**, the class of verbs denoting actions (including processes, sensations, etc.) (**verbs of action**), distinguished by their occurring in the progressive form and in the imperative, e.g., *He is running* but *\*He is knowing; Run!* but *\*Know!* (contrasts with **stative (verb)**).

**ed-form** A label denoting the simple past tense of the verb in English, e.g., *talked, sat*.

**elative** In **inflecting** and **agglutinating languages**, the **case** denoting motion 'away from (inside)' a place, sometimes contrasting with **ablative** 'from outside'.

**element 1** A general term for any part of linguistic structure. **2** An immediate constituent of a hierarchical unit, e.g., the elements of sentence structure are subject, verb, complement, object and adverbial; an affix is an element of word structure, etc.

**ellipsis**, abbreviation, contraction, reduction The omission of that part of a linguistic structure which would be repetitive hence is recoverable from the context, e.g., *Where are you going? Home.* (*Home* being an abbreviated form of *I am going home*.)

**embedding** Describes a process or construction where part of the structure which might have functioned as an independent sentence functions as a constituent in another sentence, e.g., *The girl who went away was my best friend* where *who went away* is an **embedded sentence**.

**emphatic** Describes a form of the verb or reflexive pronoun used for emphasis, e.g., *Do come in; They met the Queen of Sweden herself*.

**en-form** A label denoting the past participle of the verb in English, e.g., *She has fallen/swooped/gone/leapt*.

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**enclitic** An unstressed word which has become attached to a preceding word, e.g., *cannot, aren't, prithee*.

**end focus** The reserving of **new** (see **given**) material to the end of a sentence, e.g., *What we want is Watney's* Cf. **focus**.

**endocentric (headed) construction** A construction whose distribution is identical with that of one or more of its constituents, e.g., the noun phrase *pretty Polly* is identical in distribution to the noun *Polly*.

**epistemic modality** That variety of **modality** concerned with statements which assert or imply that the truth of a proposition is known or believed, e.g., where *He must be on this train* means 'All the evidence suggests that he is on this train'. Cf. **alethic modality** and **deontic modality**.

**epithet** A modifier characterizing a particular noun, freq. a name, and usually associated with it, e.g., *Charles the Bold*.

**equative, equational 1** A sentence type where two noun phrases are placed in relationship of identity, e.g., *Margaret is the boss*. **2** see **degree**.

**ergative 1** Said of a language (e.g., Basque), construction etc. where the object of a transitive verb and the subject of an intransitive verb display the same case. **2** In such a language, said of the subject of a transitive verb. Cf. **absolutive**. **3** In transferred use, applied to languages not traditionally regarded as 'ergative', relating sentences such as *The glass broke* and *The boy broke the glass* in a similar fashion, the **agent** of the action being referred to as the 'ergative subject'. Cf. **unaccusative**.

**essive** In **inflecting** and **agglutinating languages**, the case expressing the meaning 'at' a place.

**event** A dynamic situation as expressed by a verb which in terms of time is momentary, e.g., *break, happen* (contrasts with **process**).

**eventive** In analysis in terms of **participant roles**, an element of a sentence, other than the verb, which expresses an action, e.g., *The first ascent of Everest took place in 1953* has an eventive subject.

**evidential 1** A sentence belonging to the general type described under **epistemic modality** where the speaker's knowledge of the truth of a proposition is based on evidence, such as eye witness testimony, hearsay, etc. (rather than possibility or necessity) and which is open to question by other participants. **2** A grammatical category differentiating the type of authority on which a statement is made.

**evolutive** A type of **aspect** or **Aktionsart** which slightly alters the meaning of the verb, e.g., Russian *kricat'* (shout) > *raskricat'sja* (start shouting, raise a cry).

**exclamation** In the classification of sentences according to function, a vehement expression of emotion freq. lacking the structure of a sentence; marked in

speech by strong intonation, in writing by an exclamation point, e.g., *Good grief! What an awful thought!* See also **exclamatory sentence**. (Contrasts with **command**, **question**, **statement**.)

**exclamative, exclamatory (sentence)** A sentence type typically used in exclamations, freq. beginning in English with *what* or *how* without subsequent subject-verb inversion, functioning semantically to express strong emotion, e.g., *How kind you are! What a surprise!*

**exclusive 1** Describes the first-person pronoun *we* when it does not include the person addressed. (Contrasts with **inclusive** where the addressee is included.) **2** Describes *or* when part of an exclusive disjunction (see **disjunction 1**).

**existential** Describes a sentence beginning *There is/are*, expressing the fact, belief, etc. that something exists, e.g., *There is a car in the drive*.

**existential quantifier** see **universal quantifier**

**exocentric construction** Any construction which is not **endocentric**, i.e., no part of it can substitute for any other part in distribution, e.g., *Polly flies*.

**expansion** The process whereby new elements may be added to a structure without any change to the basic nature of the structure, e.g., *The hat is on the peg* may be expanded to *The red hat is on the first peg*.

**experiencer 1** The entity which, or more commonly, who experiences something, the subject of a state. **2** = **dativ 2**.

**explicative** A subordinate clause which qualifies or explains the main events in a sentence, e.g., *He ran home because/although/while it was raining*.

**extension** also **extensional meaning** The class of entities to which a term is correctly applied, a listing of all members of the class, e.g., **the extension of cats** includes *panther, lion, moggie*, etc. Cf. **intension**.

**extraposition** The process or result of relocating an element close to the ed of a sentence, e.g., by fronting the construction with an **extrapositive** or **anticipatory it**, e.g., *It became apparent that the cat was in the house* rather than *That the cat was in the house became apparent*.

**factitive** Describes a verb or other construction which denotes an event or process by which a cause produces an effect or result, e.g., *kill, choose*. Cf. **causative**. **2** also **result** In case grammar, the **case relation** or **theta role** of the result of the action of a verb.

**factivity** A property of a verb or other predicator which takes a complement clause the truth of which is presupposed by the speaker, e.g., *She knew/realized/ was surprised that the cat was gone* Cf. **non-factivity**, **counterfactivity**.



**feature** Properties used to classify syntactic categories, e.g., [ $\pm$ N] (noun), [ $\pm$ Det] (determiner), [ $\pm$ Pas] (passive), etc.

**felicity conditions** In the theory of speech acts, the conditions which must be fulfilled if a speech act is to be successful, specif. preparatory conditions, that the speaker must have authority to engage in the speech act in question; **sincerity conditions**, that the speaker is not lying, etc; essential conditions, that the speaker is committed to what he or she says, i.e., is not self-contradictory. Cf. **commitment**.

**finite** A state of the verb whereby it can function in a main clause and display differences of **tense**, **mood**, **aspect** and **voice**. (Contrasts with **non-finite**.)

**focus** The new material in a sentence, e.g., if *John fell* is the answer to *Who fell?*, *John* is the focus, not so if the question is *What happened?* (Contrasts with **presupposition**.)

**force** In analysis in terms of **participant roles**, the involuntary cause of an action or event, e.g., *the storm* in *The storm devastated England*.

**form class 1** A class whose members are syntactic equivalents, i.e., they have the same distribution throughout the sentences of the language. **2** Used in place of the trad. term **part of speech**.

**formative 1** A bound form which is part of a word, e.g., complex Latin verb endings such as *-abat*, *-abit* or minimal forms such as the English plural ending *-s*.

**free** Lacking formal constraint, esp. of **morphemes** which can exist as a word, e.g., *run*, *hat* as opposed to *un-*, *anti-*, (Contrasts with **bound**.)

**frequentative = iterative**

**function** How a constituent works, its relationship with the other constituents in a larger unit, as, a noun or noun phrase in relation to a sentence can work or function as subject, object, complement, modifier, etc., freq. seen in contradistinction to **form 1**

**function word = grammatical word**

**fusion** The merging of distinct linguistic elements in a single linguistic unit, e.g., of the exponent of plurality in *feet* of 'past' in *took*, etc. See also **fusional language** (see **inflecting language**).

**fusional language = inflecting language**

**future (tense)** see **tense 1**

**gap** The absence of a linguistic unit at a particular place in a pattern of semantic, syntactic or phonological relationships, e.g., French has no term for 'shallow' corresponding to 'deep', *profond* varies with *peu profond*, unlike *haut/bas* (*high/low*), etc.

**gender** A grammatical category in which nouns are classified as belonging to a number of sub-classes

based on properties related to some extent to natural properties: the trad. genders are masculine, feminine, and neuter, others are also required (based, e.g., on shape, edibility, animacy, in, e.g., the Bantu languages). Gender concord is required between noun and adjective, etc. and in the selection of pronouns. Note the distinction between natural gender where the sex of the referent is taken into account and **grammatical gender** where the classification is arbitrary. *Elle est belle*, *le nouveau professeur* illustrates both sorts.

**generic** Describes a word or usage referring to a class of entities, e.g., *The whale is a mammal* | *Whales are mammals* or states of affairs, e.g., *Birds build nests*.

**genericity** A type of **aspect** or **Aktionsart** expressing a generic property.

**gerund = verbal noun**

**gerundive** The future passive participle in Latin, functioning as a verbal adjective and expressing the fitness or necessity of the action to be performed, e.g., *amandus* deserving or requiring to be loved; sometimes used of similar usages in other languages.

**given** In the analysis of utterances in terms of information structure, the information already supplied, contrasting with what is **new**. Cf. **presupposition**, **focus**, **theme**, **topic**.

**government, rection** In **inflecting** and **agglutinating languages**, the morphological control imposed by a word (class) on another, e.g., in Latin, prepositions govern or determine the case of the following noun: *ad Romam* but *ab Roma*. A particular instance of **c-command**, the circumstance where a lexical head (Noun, Verb, Preposition) is able to assign **Case** to its NP Complement; government is a prerequisite of Case-assignment, thus, e.g., a verb cannot govern a NP complement in another clause.

**governor 1** The lowest **c-command** node in a tree, providing that there is no intervening noun phrase. **2** also **controller** the superordinate node in a dependency tree which controls a set of dependent nodes, thereby defining a specified structural relationship, e.g., in clause structure the verb is the governor of the noun phrases.

**gradability 1** The ability to be graded in degree (comparison) or intensification, e.g., *more/most/very unfortunate* but *\*more/most/very inside*. **2** **gradable** terms express variation within sense relationships, e.g., antonyms can be gradable as, *up/down*; *a little bit up/further down*; or applying to more precise specification within a general notion (*lump/piece/sliver*).

**grammar 1** The study of language and the rules that govern its usage. **2** A description of the forms of words and the manner in which they combine to form phrases, clauses or sentences, = **morphology** + **syntax**. **3** A systematic and explicit account of the structure of (a) language according to the tenets of one or

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other of the theories of modern linguistics, freq. taken to include **phonology** as well as **morphology** and **syntax**, e.g., **transformational grammar**, **case grammar**, etc.

**grammaticality, well-formedness** The conformity of a linguistic structure (phrase, clause sentence, etc.) to the rules of (a particular) grammar. (Contrasts with **ungrammaticality**.) Cf. **acceptability**.

**grammaticalization, grammaticization** The attribution of **grammatical meaning** to a lexical item, e.g., Scots *ane*, the lexical item 'one' is also the indefinite article 'a, an'.

**group genitive** In English, a syntactic construction where the **genitive**(s) is added at the end of a post-modified or coordinated noun phrase, e.g., *the hair of the dog that bit you's effect*, *Jane and Mary's day out*.

**habitual** Describes a form or **aspect** expressing repetition, e.g., *He comes frequently*, *He leaves at six*.

**head** In an **endocentric construction**, the element distributionally equivalent to the whole phrase, e.g., *cat* in *John's cat*, *the tabby cat*, *the cat which I bought my daughter* and *lapped in has lapped the milk*.

**heavy noun phrase** A noun phrase with a relatively long and complex construction, one allowing **postposing**, i.e., *Gillian finds friendly all the children in her class* as against *\*Gillian finds friendly all the children*.

**historic present** The use of the **present tense** in narrative, anecdote, etc. where the past might be expected, e.g., *So he tells me his name and I say to him ...*

**honorific** A grammatical form used in the expression of respect or politeness or making distinctions of social status, esp. in Japanese or, e.g., *vous/tu* as polite/familiar forms in French.

**hortative** The grammatical category of **mood** which expresses exhortation.

**hypotaxis** A variety of **subordination**, specif. of clauses, where a dependent construction is connected to the main clause by a subordinating conjunction, e.g., *I will go home when the bus comes*. (Contrasts with **parataxis**.)

**inalienable** see **alienable**

**inanimate** see **animate**

**inceptive** = **ingressive** 2

**inchoative** (also **ingressive**) In some approaches, used of the process of change from one state to another, e.g., in *The track narrows at this point*.

**incorporating language** A language which uses long, morphologically complex words, typically nouns (cf. **noun incorporation**), as a preferred construction, the ratio of word to morpheme being one-to-many and

lexical morphemes being able to combine in a single word, as, e.g., in many American Indian languages.

**indeclinable** Describes word forms which do not exhibit paradigmatic variation. See also **declension**, **decline**.

**indefinite** see **definiteness**

**indefinite article** see **article**

**indefinite pronoun** The **pronoun** expressing one of any number, *anyone*, *nobody*.

**indefinite relative** see **restrictive relative**

**indeterminacy** The state of uncertainty obtaining in many areas of linguistics, e.g., among native speakers as to the **grammaticality**, or **acceptability** (sense 1) of particular examples; between categories, as to where boundaries should be drawn, etc. Cf. **indeterminate class**.

**indeterminate class** A word class which cannot be said with certainty to be either **open** (see **open class**) or **closed** (see **closed class**), e.g., the class of conjunctions, the vocabulary of an individual speaker.

**indicative** The inflectional **mood** expressing **factivity** and simple assertion used in the verb forms of statements and questions (**declarative** and **interrogative** sentence types), e.g., in Latin *amat* (he is loving). Cf. **imperative**, **subjunctive**, etc.

**indirect object (IO)** The recipient or beneficiary of the action of the verb, usu. so termed when no preposition is present, as *I gave/got my daughter a cat*, the equivalent of or equated with *to/for my daughter* in *I gave/got a cat to/for my daughter* (= **dative** function in **inflecting** and **agglutinating languages** and sometimes trad. so termed in English).

**indirect question** A **question** related in a subordinate clause, e.g., *He asked me if I was going home*. (Contrasts with **direct question** (see **direct speech** (question))).

**indirect** (reported) speech, *oratio obliqua* An utterance related in a subordinate clause, e.g., *I told him that I was going home*. (Contrasts with **direct speech**.)

**indirect speech act** In the theory of speech acts an utterance in which the communicative intention is not reflected in the linguistic form used, e.g., *It is very cold in here* may express a request to have the windows closed.

**inessive** In some **inflecting** and **agglutinating languages**, e.g., Finnish, the **case** expressing location or position within a place.

**infinitive** The **non-finite** form of the verb regarded as the unmarked or base form and used to cite a particular verb, e.g., the verb *go* (= the bare or zero infinitive or, in English, with the particle *to*, the verb *to go* (= the *to-* infinitive).

**infix** An **affix** inserted within a root or stem, e.g., in Tagalog *sumulat* (wrote) < *sulat* (write).

**inflecting (fusional) language** A language in which words cannot be readily separated into morphs, the inflections indicating grammatical changes being to some extent fused with the stem.

**inflection, inflexion** A change made in the form of a word (chiefly by the addition of a suffix or prefix) to indicate variations in the grammatical relations between words in a sentence without changing the class to which they belong, e.g., in the declension of nouns and conjugation of verbs.

**inflectional morphology** (The study of) the process undergone by words by the addition of *inflections* whereby distinctions of category, case, etc. are achieved, e.g., *like, likes, liking; cat, cats*.

**information structure** The structure of sentences or discourse analyzed as to how they convey information, specif. with regard to **given** and **new** information and the intonational patterns by which information units are signaled.

**ing-form** The English verbal form ending in *-ing* (*coming, going*), specif. the present **participle** and the **verbal noun**.

**ingressive** Also **inceptive, inchoative** A type of **aspect** or **Aktionsart** where the beginning of an action is marked grammatically, indicated in English by, e.g., *be on the point of, be just about to: I'm just about to go out*; or in Russian *pet'* (sing) > *zapet'* (begin to sing).

**intension, intensional meaning** The definition of a class of entities by citing the properties or attributes the members have in common, e.g., the class of *cats* can be defined as *feline* Cf. **extension**.

**intentionality** In the theory of speech acts, refers to the intention of the speaker with regard to the performance of a communicative act and the listener's recognition of this intention, e.g., in such statements as, *I forgive you*.

**interfix** A type of usu. meaningless **affix** inserted in a word between two elements, e.g., *s* in German *Liebeslied* (love song).

**interjection** A variety of exclamation.

**interrogative 1** The sentence type or verb form typically used in asking a question, e.g., *Is John coming?* Cf. **declarative, imperative. 2** also **dependent** The inflectional **mood** used in some question forms in some Celtic languages.

**interrogative pronoun (adjective, adverb)** A pronoun, e.g., *who* etc., (**adjective**, e.g., *which*, etc., **adverb**, e.g., *why*, etc.) marking interrogative constructions.

**intransitive (one-place) verb** A verb which combines with only one nominal, e.g., *Adam died* (Contrasts with **transitive verb**.)

**invariable, invariant** Describes a word which does not undergo inflectional change, e.g., *and, so*.

**isolating (analytic) language** A type of language in which the words are invariable, syntactic relationships being organized chiefly through word order, e.g., Vietnamese. (Contrasts with **agglutinating language, inflecting language**, synthetic language.)

**item** An individual linguistic form, esp. a **lexical item**, a word as listed in an inventory or dictionary.

**iterative, frequentative** A type of **aspect** or **Aktionsart** which expresses the repeated occurrence of an action on a single occasion, e.g., *He kept on bouncing the ball, The ball kept bouncing*. (Contrasts with **semelfactive**.)

**jussive** The verb form or sentence type expressing a command (or prohibition) in some languages, adopted more generally in some approaches as the term paralleling **imperative** as **declarative** parallels **indicative** and standing in the same relationship to **command** or **mand** as **declarative** and **interrogative** stand to **statement** and **question**.

**labeled bracketing** (also **bracketing**) in which the constituents are indicated by superscript or subscript labels, e.g., [S[NP<sub>[Det the]</sub> [N lady] [VP[V wore][NP<sub>[Det a]</sub> [Adj red] [N hat]]]].

**left branching** Describes a construction whose representation in a tree-diagram shows complexity in the left side of the diagram, e.g., *the mouse's hole's entrance's location*. (Contrasts with **right branching** as in *the location of the entrance of the hole of the mouse*.)

**left dislocation** A variety of **topicalization**, specif. the transposition of a constituent from its canonical position where it is replaced by a pronoun (or a noun phrase with the same referent) to initial position in a sentence, e.g., *The mouse, I saw it (the horrible little rodent)*.

**lexeme** The minimal distinctive unit in the semantics of a language, a word in the sense of a unit of meaning incorporating all the grammatical variations or forms in which it is liable to occur, e.g., the verb *sing* (incorporating *sings, singing* the present participle, *sang, sung* but not *song, singer* or *singing* the verbal noun); *good* (including *better, best*).

**lexical item** An **item** (sense 1) of vocabulary, commonly used as an equivalent of **lexeme**.

**lexical (full) verb** A verb with lexical meaning, e.g., *arrive, go*. (Contrasts with **auxiliary verb**.)

**lexical (full, content) word, contentive** A word having lexical meaning, e.g., *fox, arrive*. (Contrasts with **grammatical word**.)

**lexicon** The vocabulary or word-stock of a language, a listing of this, as in a dictionary. **2** The lexical component of a generative grammar or other modern grammatical theory, containing morphological, syntactic and semantic information relevant to individual

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**lexical entries** and to the organization of the particular grammar.

**linearity** Describes the structure of the sentence, i.e., a sentence is a unidimensional string or sequence of concatenated constituents, which is a description of a linear structure.

**(linguistic) environment** Those parts of an utterance or text surrounding a linguistic unit, esp. as phonetic, phonological, syntactic, etc. environment.

**linguistic form** A linguistic unit or element of any sort (sentence, lexeme, phrase-structure tree, etc.) treated with regard to its grammatical, phonological, etc. structure in contradistinction to its **function**.

**localism** The proposition that expressions of location in time or space are more basic grammatically and semantically than non-spatial expressions; tense, aspect, possession and existence are viewed as reflecting underlying **locative** features.

**locative 1** In **inflecting** and **agglutinating languages**, the **case** expressing place. **2** Describes an adjunct, complement, etc., expressing place or **location**, e.g., *in the street*. **3** In case grammar, a **case relation** identifying the location or spatial orientation of the state or action identified by the verb.

**locutionary act** In the theory of speech acts, the production of a meaningful utterance by the physical act of uttering words. Cf. **illocutionary** and **perlocutionary acts**.

**locutor = addresser**

**logical connective, logical constant** In propositional calculus, the means of constructing complex propositions out of simple propositions; the basic relationships occurring between propositions, i.e., **conjunction**, **disjunction**, **equivalence**, and **implication**.

**logical subject** see **subject**

**logophoric pronoun** A type of **anaphora**, a **pronoun** used esp. in reported speech to indicate that the source of the report is the same as the person, etc. whose actions are being reported.

**macrolinguistics** The broadest possible view of **linguistics** including phonetics at one extreme and **macro-sociolinguistics**, the study of relationships between language and society at the other.

**macro-role A participant role** which subsumes a number of others, e.g., in **role and reference grammar**, **actor** (sense **2**) subsumes all the participant roles which function to instigate or control the situation.

**main clause** A clause which has a finite verb and can function independently as a sentence.

**main verb** The most important verb in a clause, usu. a **lexical verb**, e.g., *came* in *He came home at three*; *come* in *He hasn't come home yet*; *is* in *He is late*. (Contrasts with **auxiliary (verb)**.)

**major, favorite** Of a sentence pattern, most productive, commonest in English **subject + predicate (NP + VP)**.

**manner 1** A variety of **adverbial clause**, e.g., *He took to wealth as if he were born to it*. **2** A category of **adverbs** and **adverbials** which express something qualitative about the verb or adjective modified or how something occurred, e.g., *He ran quickly and with ease*, *She came precariously close to falling*.

**markedness 1** The presence of some linguistic feature in an element as opposed to its absence, e.g., /b/ is **marked** for **voice**, /p/ unmarked; *god* is unmarked vis à vis *gods* which is marked for plurality and *goddess* which is marked for gender; *bitch* is marked for gender vis à vis *dog* which is unmarked. **Markedness** is freq. indicated by the presence of an affix or by restriction in distribution, e.g., *dog* = male/female canine, *bitch* = female canine. **2** Any prominent or unusual feature or pattern, e.g. alliteration.

**mass (non-count(able), uncountable) noun** A noun which denotes a quantity or mass of unindividuated material, e.g., (*some*) *butter*, *duck*, *pineapple*. (Contrasts with **count(able) noun**.)

**meaning** What is conveyed or intended to be conveyed by language, the sense, signification or import of words or utterances, also, of any other aspect of linguistic activity, i.e., trad. restricted to semantic or **lexical meaning**, more recently, esp. in post-firthian linguistics, extended to the information conveyed by, e.g., grammar, tone of voice, accent, vocabulary, etc.; the subject matter of linguistic study, also the principle means of linguistic analysis, i.e., the process of analysis depends on the perception of distinctions in meaning. See esp. **affective meaning**, **cognitive meaning**, **denotation**, **grammatical meaning**.

**metalinguage** The language or terminological system used as a means of talking about the object of study, (in the case of linguistics, the object language, e.g., *transitive*, *tense*, *plural* are terms in the metalanguage used to talk about natural language. Such usage may be termed **metalinguistic**.

**metaphor** Language belonging to one field of reference used analogously in another, e.g., *kick-start the economy*, *rose-bud lips*.

**middle voice** A **voice** of the verb in Greek, used specif. where the action or state expressed in the verb affects the subject of the verb or the subject's interests, i.e., that the action is being carried out by the subject for his or her benefit, e.g., *louomai khitona* 'I am washing (my) shirt'. (Contrasts with **active 1** and **passive**.)

**modification** The limiting of a linguistic element by another dependent linguistic element (the modifier), restricted to the use of adjectives and adverbs, or extended to any dependent structure, e.g., in *the small house on the prairie*, *house* is **modified** by *small*, also, in some approaches, by *on the prairie*.



**morph** The substantial exponent of a morpheme, e.g., in *kicked* two morphs represent the morphemes 'kick' and past tense 'ed', in *went* one morph represents 'go' and past tense.

**morpheme** The minimal unit of grammatical analysis one or more of which make up a **word** (sense 1), e.g., *cat* is one morpheme, *cats* (*cat* + *s*), *catkin* (*cat* + *kin*) two. See also **morph**, **allomorph**, **bound**, **free**.

**morphosyntax** That area of grammar whose categories may be defined in terms both of morphology and syntax, e.g., number, tense, etc. have morphological aspects, e.g., plural requires the addition of -s, past tense of -ed, etc., and syntactic aspects, e.g., plural nouns require plural verbs, etc.

**mutative** A type of aspect which indicates a change in status, e.g., *He got killed*.

**negative 1** Describes a word (adjective, pronoun, adverb), particle, sentence, etc. which exhibits **negation**, e.g., *no*, *nobody*, *nothing*, *nowhere*, *not at all*, *I never went there*, etc. See also **assertive**. 2 see **polarity**.

**neuter** see **gender**

**new** see **given**

**NOM = nominative**

**nominalization** The process of noun formation, the noun so formed, e.g., *sad* > *sadness*, *kill* > *killing*.

**non-count(able) noun = mass noun**

**non-factivity** A property of a verb or other predicator which does not commit the speaker to the truth of the proposition expressed in a following complement clause, e.g., *She thought the cat had gone*. Cf. **counterfactivity**, **factivity**.

**non-finite** A form of the verb capable of functioning only in dependent clauses. In English, the infinitive, past and present participles, e.g., *To go to school John passed the park*, *Going to school John ...*, *Gone to school by eight John went through the park*.

**notional grammar** A description of language in senses 1 or 2 of **grammar** based on the view that there exist extralinguistic categories (parts of speech, mood, tense, etc.) which hold true for all languages.

**noun (N)** A member of the word class trad. defined as naming a 'person, place or thing', or, in modern linguistics, with reference to its distribution (preceding the predicate, etc.), function (as subject, object, etc. of a verb) and the morphological properties it displays (inflecting for case, number, etc.). See also **common noun**, **proper noun**.

**noun incorporation** The incorporation in a verb form of an object noun, e.g., *to tale-tell*. In some languages, specif. a generic noun functioning as a cross-reference to the particular noun governed by the verb.

**noun phrase (NP), nominal (group)** A word or group of words which functions as a **noun**, having the same distribution as a noun and whose **head** is a noun. Cf. **group**.

**nuclear tone, tune** The most prominent pitch in a unit of **intonation**.

**object 1** also **direct object (DO)** The noun (phrase) following and dependent on a finite transitive verb, in simple declarative sentences freq. identified with the patient or goal, e.g., *The cat chased the mouse*. In **inflecting** and **agglutinating languages** freq. identified by the **accusative** case. Cf. **indirect object**. 2 The noun (phrase) governed by or following a preposition, e.g., *between us*, *down the street*.

**obviative** A fourth person form, used to distinguish a further entity from a third person (see **person**) entity already mentioned.

**optative** The inflectional **mood** expressing **counterfactivity** and remote possibility (in Greek and Sanskrit formally distinct from the **desiderative**). Cf. **indicative**, **subjunctive**, etc.

**order** The sequencing of linguistic units in particular allowable patterns, e.g., the plural marker -s always attaches to the end of a lexical item, *cows* not \**scow*. Cf. **word order**.

**paradigm 1** An example of pattern illustrating the inflectional forms of a part of speech, usu. set out in a table. 2 More generally, a set of relationships between linguistic units where one unit substitutes for another according to different linguistic environments, e.g., in *I ate an orange* / *The orange was eaten by me*, *I* and *me* are in a **paradigmatic** relation, substituting for each other in nominative/oblique or actor/patient contexts, also *an* and *the* can be seen as part of a paradigm functioning in the context -*orange* and substitutable for each other. (Contrasts with **syntagmatic**.)

**part of speech** A grammatical class of words, noun, verb, etc. = **word class**.

**participial adjective** A present or past participle used as an adjective, e.g., *flying doctors*; *cooked chicken*.

**participle** A form of the verb which participates in some characteristics of verb and adjective, e.g., in *He was running* and *He was cheated*, *running* and *cheated* are respectively present and past participles, or *ing-* and *ed-* forms Cf. **participial adjective**.

**particle (P,prt)** An **invariable** word with a grammatical function and difficult to classify in terms of parts of speech, includes, e.g., the **negative particle**, *not*, *to* in the infinitive form *to go*, the adverbial component in phrasal verbs, e.g., *away* in *Go away*, etc.

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**partitive 1** (A form) serving to denote a part or quantity, e.g., *some, section, pint*. **2** In some **inflecting** and **agglutinating languages**, e.g., Finnish, the **case** expressing a part of something.

**passive (PAS)** In the analysis of **voice**, a sentence or clause in which the subject is the **patient** or **recipient** in relation to the action, e.g., *The car was driven by Mary*; the verb form in such a sentence or clause. (Contrasts with **active** and **middle voice**.)

**past perfect = pluperfect**

**past (tense)** see **tense 1**

**path** The route taken by an entity from **source** to **goal**, e.g., in *James came towards him*, *towards* expresses the 'path'.

**patient** in some approaches also **goal** The entity **affected** by the action of the verb, sometimes to be equated with the **object**, e.g., *the cake* in *Susan ate the cake* or *The cake was eaten by Susan*, but *the prize* in *The cake was the prize*.

**perdurative** see **resultative**

**PERF = perfect, perfective**

**perfect, present perfect** A form of the verb, sometimes regarded as a **tense** sometimes as **tense + aspect**, which expresses some variety of past time, in English, the verb form conjugated with *have*, e.g., *He has written*, and regarded as pastness having some relevance to the present, contrasting, e.g., with *He wrote*. Cf. **pluperfect, imperfect, aorist**.

**perfective (PERF)** An **aspect** of the verb indicating completion of an action. (Contrasts with **imperfective**.)

**performative** In the theory of speech acts, a sentence type whereby an action is performed in the uttering of the sentence, e.g., *I promise ...*, and which is not analyzable in terms of truth-values. (Contrasts with **constative**.)

**perlocutionary act** In the theory of speech acts, an act performed by the way something is said, i.e., by using language to persuade, comfort, move to anger. Cf. **illocutionary act, locutionary act**.

**person** A grammatical category used to identify the participants in a situation: first person, second person, third person referring respectively to the speaker (and associates) (*I, we*); hearer(s) (*you*); persons and things other than the speaker and hearer (*it, they, someone*, etc.).

**personal pronoun** The **pronoun** referring to **person**, *I, me, you, she*, etc.

**pluperfect, past perfect** The **perfect** located in past time, i.e., a form of the verb expressing completion of an action in the past, e.g., *He had written*.

**plural(ity)** A contrast of **number** referring to two or more than two, e.g., *six cats*. (Contrasts with **dual(ity)**, **trial(ity)**, **singular(ity)**.)

**polarity** The contrast **negative/positive** realized syntactically by the negative particle *not*; morphologically by *un-, dis-*, etc. e.g., *happy/unhappy, loyal/disloyal*; and lexically, in spatial expressions, where a particular point is seen as zero (negative), e.g., the ground or a source, etc., and its opposite, e.g., above the ground or a goal is seen as positive, giving negative/positive oppositions in *down/up, low/high, back/front*. The concept may be extended beyond any link with its spatial origins to encompass negative vs positive in other lexical fields as, e.g., *black/white* or perhaps even *fat/thin*.

**possessive** A linguistic form indicating ownership or possession, e.g., *my, mine*, including **genitive** and post-modifying genitive, and, in some languages, closely related to **locative** (senses 1 or 2).

**postposition** A particle in, e.g., Japanese, Turkish, etc. which fulfils the functions of a **preposition** in English but comes after the noun it modifies, e.g., Japanese *Tokyo e* (to Tokyo).

**predicate 1** In the analysis of the sentence, the second part of a two-part analysis: **subject + predicate**, specif. the verb + object + adjuncts (some approaches, however, would exclude the adjuncts from the predicate), e.g., in *Susanna fell*, *fell* is the predicate, similarly *ran away, ate an apple, lay on the grass in the park* might fill that slot. Semantically, the predicate can frequently be equated with the **comment**. **2** A term used in combination with a **name** to give information about the entity referred to by the name or ascribe a property to it, e.g., *big in John is big, likes bacon in Amy likes bacon or the geriatric nurse in Amy the geriatric nurse*. (The last is sometimes called a predicate nominal.)

**predicative** Describes an **adjective** or other **modifier** in post-verbal position, e.g., *Susanna is happy*. (Contrasts with **or**, in some approaches, is viewed as included in **attributive**.)

**predicative expression** An **expression** which ascribes a property to an entity and typically the **predicate** (sense 1) of a sentence, e.g., *tabby* in *Jimmy's cat is tabby*. Cf. **referring expression**.

**preposing** The movement of a constituent of a sentence to a position earlier in the sentence than it would normally occur, e.g., *Tomorrow I leave for Spain; I told her to finish at once but finish she did not*.

**preposition (P, PR, PREP)** A **particle** which has a grammatical or local function, acting usu. in combination with a following noun phrase (see **prepositional phrase**), e.g., *in the house, beyond reason, from Venice*, etc. See also **postposition**.

**present perfect = perfect**

**present tense** The unmarked **tense** of the verb, referring to things as they are at the present moment (now), e.g., *He takes his first extraterrestrial step*,

sometimes inclusive of past time, (up to and including now), e.g., *He takes a packed lunch*, and sometimes, also, future time, e.g., *The dodo is extinct*.

**presentational** Describes a type of construction which introduces new material into the discourse, e.g., sentences beginning with *here* or *there*: *Here is the shipping forecast*; *There is a cat on the roof*.

**presupposition** The assumptions made in an utterance or discourse, the **given** which can be inferred from what is stated, e.g., from *Has your cat recovered?* it can be inferred that the listener own a cat and that the cat has suffered some illness, accident, or the like. (Contrasts with **entailment**, **focus**.)

**preterite** The simple past tense form of the verb, e.g., *He fell*.

**Process** A dynamic situation, as expressed by a verb, which exists over time, e.g., *fly*, *run*. (Contrasts with **event**.)

**progressive (PROG), continuous** An aspect of the verb (trad. treated as a **tense**), expressing duration or frequency of repetition over time, e.g., *I was traveling to Glasgow for three hours or every day*. (Contrasts with **punctual**, **simple**.)

**pronoun** A word that can substitute for a noun or noun phrase (or clause) or words of similar type, e.g., *it* and *what* in *What fell? It did, that clock on the shelf or he* in *John left work, he went home*.

**proper noun (name)** A noun which refers to an individual person, place, etc., e.g., *Thomas*, *Boston*. (Contrasts with **common noun**.)

**proposition** That which can be either true or false, used variously for a statement of this sort, esp. of a declarative sentence or what is expressed in a declarative sentence.

**protasis** The conditional (sense 1) or subordinate clause in a conditional sentence, e.g., *If I come he must go*.

**prototype** A member of an **extension** whose characteristics make it typical of that extension, e.g., in the set of vehicles, a train rather than a balloon.

**prototype semantics** The analysis of word meaning in terms of **prototypes**, as a means of overcoming the difficulties posed by word categories having indefinite boundaries.

**pseudo-cleft sentence** A construction resembling a **cleft sentence** but where the relationship of **main clause** and **subordinate clause** is evident, e.g., *What she wore was a red hat* or *A red hat was what she wore* and pseudo-cleft and inverted pseudo-cleft versions of *She wore a red hat*.

**punctual** A type of **aspect**, describing an event regarded as happening momentarily (momentary) or having no duration in time (**transgressive**). (Contrasts with **durative** and **progressive**.)

**quantifier (Q)** One of a set of lexical items which expresses quantity, e.g., *all*, *every*, *some*, *a number*, etc. See also **universal quantifier**.

**question (Q)** In the classification of sentences according to function, a sentence used to elicit a response, information, etc. usu. expressed in the form of an **interrogative**. See also **wh-question** (see **wh-form**).

**recipient** In analysis in terms of **participant roles**, the entity passively implicated in the event denoted by the verb, characteristically the indirect object, e.g., *James* in *Mary fed James a story*. (Contrasts with **affected**, **agentive**.)

**reciprocal** Describes a relationship of mutuality as expressed by various word classes, e.g., the **reciprocal pronouns**, *each other*, *one another*, or **reciprocal verbs**, e.g., *interact*, *meet*.

**rection = government**

**recursion** The repetition of syntactic structure, e.g., *a big, fat, happy man; a doll and a book and a skateboard ...*; *the man that kept the dog that killed the cat that ...*

**reference 1 = denotation 2** The relationship that obtains between a linguistic expression and what it stands for or **denotes** on any particular occasion of utterance, e.g., *the cat* may mean the cat I own / have just been talking about, etc. 3 A relationship of identity obtaining between grammatical units, e.g., in *The cat went out, it likes to hunt*, 'it' **refers** to 'cat'.

**referent, denotation** The entity in the real world referred to by a linguistic expression, e.g., a particular pencil is the **referent** of the referring expression '*this pencil*'; or Socrates is the referent of the name '*Socrates*'.

**referring expression** An expression used to identify what is being talked about (the **referent**), e.g., *Jimmy's* in *Jimmy's cat is tabby*.

**reflexive pronoun** A **pronoun** which refers to the same person or thing as the subject of the verb, e.g., *myself*, *yourself*, etc.

**regular** Describes a linguistic form which conforms to the usual patterns or rules of a language, e.g., *-ed* is the regular past tense form in English: *loved*, *parted*. (Contrasts with **irregular** (see **irregularity**)).

**relational grammar** A **grammar** (sense 3) which takes grammatical relations rather than categories as its central concept, i.e. **subject** (sense 1) **object** (sense 1) rather than **noun**, **verb**.

**relative adverb** An **adverb** used to introduce a post-modifying relative clause, e.g., *the time when I won the jackpot*, *the place where we met*.

**relative clause** A **clause** (sense 1) functioning as a modifier within a noun phrase, introduced in some

## Glossary

languages by a **relative pronoun**, e.g., *the woman that wore the red hat*. See also **adnominal**, **restrictive relative**, **zero relative**.

**relative pronoun** A pronoun used to introduce a **relative clause**, e.g., *who*, *which*, *that*.

**relative universal** A **universal** which is shared by most languages, a tendency among languages.

**representative** In the theory of speech acts, describes an utterance in which the speaker conveys his or her belief as to the truth of a proposition, e.g., *I believe*, *I deny*, etc.

**restrictive** Describes a type of **modification** where the **modifier** is part of the essential identification of the noun, etc. that it modifies, e.g., in *A black cat crossed his path*, seen as a symbol of good luck, *black* is essential to the identification 'black cat'; *a white*, *tabby*, etc. *cat* has not the same significance. A restrictive modifier is stressed; *a black cat*. (Contrasts with **non-restrictive**, as in, e.g., *Look at the little black cat* where *black* is unstressed.)

**restrictive (defining) relative A relative clause** which defines the noun with which it occurs, e.g., *The mountain which he climbed was Mont Blanc*. (Contrasts with the **indefinite** or **non-defining relative**, e.g., *He got injured on Mont Blanc, which he was climbing*.)

**restructuring = reanalysis**

**result 1** also **resultative**, **resulting**, **resultant** A clause or sentence element expressing outcome or consequence, e.g. *so that it would work*; *with the result that*, etc. **2 = factitive 2**.

**resultative** A type of **aspect** or **Aktionsart** of the verb expressing completion, including, e.g., **terminative**, **perdurative**, **finitive**, **total** expressing various shades of meaning.

**resumptive (shadow) pronoun (relative)** A pronoun or **relative clause** which reiterates or recapitulates something expressed previously, e.g., *John Smith, surely you've heard of him*, *She went into a street, a street which she knew of old*.

**revised extended standard theory (REST)** In generative grammar, the revised version of the extended standard theory incorporating the notion of **trace** into the process of **movement**; other changes include the incorporation into the base component of the lexicalist hypothesis and **X-bar theory**, **shallow structure**, etc.

**role and reference grammar** A lexically based grammar which regards the functional role of grammatical units as primary, taking the macro-roles actor (sense **2**) and **undergoer** as primitives.

**root 1** also **base** The element in a word that cannot be further analyzed while still expressing some essential element of the meaning of the word; the core of a word to which affixes are added, e.g., *feel*, *boy*, *-cipe* (in *recipe*. Cf. **stem**. **2** The part of the tongue furthest

back in the mouth, opposite the wall of the pharynx. **3** In generalized phrase structure grammar and metrical phonology, the topmost node in a tree diagram; in metrical phonology.

**rule** A usually valid generalization as to relationships holding between linguistic elements or structures. A prescription for good usage.

**saturative** A type of **aspect** or **Aktionsart** which expresses fulfilment, e.g., Russian *pljasať* (dance) > *napljasať'sja* (dance to one's heart's content).

**scale and category grammar**, Hallidayan (neo-Firthian) grammar A theory of linguistic description that relates linguistic form (**grammar** (sense **2**) and lexis) to phonic or graphic substance on the one hand and to the extralinguistic situation on the other by means of the interlevels of phonology or orthography and context of situation; linguistic form itself is analyzed as four **categories** (**unit**, **structure**, **class** and **system**) related to each other along three scales (rank, delicacy and exponence). Cf. **systemic grammar**.

**scope** The extent of the influence of a particular form over the stretch of language in which it occurs, esp. of negatives, quantifiers, adverbials and interrogatives, e.g., a negative influences everything that comes after it in the clause, cf. *not certainly distinguishable from the rest* and *certainly not distinguishable from the rest*.

**secondary predication** The relationship of complement with the subject in a sentence which already includes a primary predication, e.g., the relationship between *Susanna* and *dead* in *Susanna fell down dead*.

**self-embedding, center-embedding** A construction involving a rule of the sort  $A \rightarrow B (+ A) + C$ , e.g., in *The girl that the boy kissed blushed*.

**semantics** The study of meaning as between linguistic expressions and what these expressions describe; the study of the relation between sentences and the thoughts they express.

**semelfactive** A type of **aspect** or **Aktionsart** which expresses a single occurrence of an event. (Contrasts with **iterative**.)

**semi-auxiliary (verb)** A lexical verb displaying in some circumstances some of the characteristics of an auxiliary, e.g., *dare*, *need*.

**sense (semantic) relations** The semantic connections a word contracts with other words, e.g., between *spinster* and *married* where 'spinster' is in part defined by the notion 'married'. Cf. also **antonymy**.

**sentence (S)** The largest unit of structure in the organization of the grammar of a language, regarded, along with the **word** as one of the two fundamental units of grammatical description. The sentence is classified formally as **declarative**, **exclamative**, **interrogative**, **imperative** types (corresponding



to the functional classifications **statement**, **exclamation**, **question** and **command**), **simple**, **complex** and **compound sentences** See also **major**, **main clause**, **clause**.

**sentence function** How a sentence works or functions, i.e., as **statement**, **command**, **question**, etc. (in contradistinction to its form: **declarative**, **imperative**, **interrogative**, etc.)

**serial verb** In Chinese, various creoles, and some African languages, a multiplicity of types of verbal construction, basically consisting of a linear sequence of verbs or verb phrases functioning as a single expanded verb phrase; also, two or more verb phrases which form a single structure linked syntactically or otherwise; or two predicates of a single noun phrase. In some usages, one or more of the verbs or verb-like phrases performs the function of marking for case, aspect, etc. In some instances the linkage is semantic, e.g., two verbs taken separately *take* and *come*, serially mean *bring*; or the verbs form a sort of compound, e.g., verbs meaning respectively *receive* and *eat*, serially mean *believe*.

**shadow pronoun (relative = resumptive pronoun (relative))**

**simple** A term used in collocation with **present** or **past (tense)** and applied to the non-progressive aspect of the verb, e.g., *he writes*; *he wrote*. Cf. **progressive**, **perfect**.

**simple object** A noun phrase functioning as **object** (sense 1), e.g., *John noticed the cat* but not *John noticed that the cat had come in*. (Contrasts with **clause object** as in the second example above.)

**simple sentence** A sentence consisting of one main clause. (Contrasts with **complex sentence** and **compound sentence**.)

**sincerity conditions** see **felicity conditions**.

**singular(ity)** A contrast of **number** referring to 'one,' e.g., *one/a cat*. (Contrasts with **plural(ity)**, **dual(ity)**, **trial(ity)**.)

**slot** In a slot-and filler model of grammar, esp. tagmemics, the position in a construction 'filled' by a particular category of word, e.g., **object slot**.

**slot-and-filler model** A model of grammar which makes use of the notions of **slots** and **fillers**, e.g., **tagmemics**.

**small clause** An interpretation as a type of clause of constructions lacking a finite or non-finite verb and consisting only of a noun phrase + adjective phrase/noun phrase/prep phrase, etc., e.g., *I think Jane terribly funny*, *I used to think you a bore*, *They want their parents out of the house*, etc.

**sortality** A characteristic or **classifier** that individuates a word as being of a particular sort, e.g., *several different grains* interpreted **sortally** might mean barley,

wheat, rye, oats ... interpreted mensurally it might mean three, ten, fifteen grains of barley, etc.

**speech act = illocutionary act**

**speech act theory** An analysis of utterances which reorganizes their function in doing something, i.e., that frequently utterances are not statements of truth or falsity, but actions, e.g., *I apologize*, *I object*, etc. The analysis includes the concepts of **constatives**, **performatives**, **illocutionary acts**, **perlocutionary acts**, **locutionary acts**.

**standard theory** The model of generative grammar developed by Chomsky in *Aspects of the Theory of Syntax*.

**statement** In the classification of sentences according to function, a sentence which presents information, in form typically a **declarative** (sense 1), e.g., *Jimmy Feinstein has a pet racoon* (Contrasts with **command**, **exclamation**, **question**.)

**stative, (static, state) (verb)** In classifying **aspect**, the class of verbs expressing states, e.g., *be*, *know*. (Contrasts with **dynamic (verb)**.)

**stem** The part of a word to which inflections are attached, e.g., *feel/feeling*, *boy/boyish/boyishly*. Cf. **base**, **root** 1.

**string** A linear sequence of constituents combined in a particular order, in the case of language, usu. taken to be words, e.g., *the + man + was + bald* (but not *\*man + the + bald + was*).

**strong verb** A verb in which the past tense and past participle are formed by changing the stem vowel, e.g., *sing*, *sang*, *sung*. (Contrasts with **weak verb** where tense variation is achieved by suffixing, e.g., *knit*, *knitted*.)

**structural ambiguity, constructional homonymity** A sort of **ambiguity** where in terms of constituent structure two grammatical analyses are possible, e.g., *younger boys and girls* may be interpreted as [*younger*] *boys and girls* or [*younger boys*] *and girls*.

**structure** The rule-governed arrangement that linguistic units enter into to form a meaningful whole, the patterns of interrelationships available to any particular unit, e.g., **clause structure**, **word structure**.

**subcategorization** The classification of lexical items according to how they may co-occur with other lexical items, e.g., a verb that may take an object is **subcategorized** as transitive; transitive is a **subcategorization feature**.

**subject (S) 1** A major element of structure which with the **predicate** (sense 1) forms a typical sentence or clause, e.g., *The cat ate a beetle*, *The beetle was eaten by the cat*. In the latter example *the cat* is sometimes called the **logical** or **underlying subject**. 2 In generative grammar, the subject is the NP immediately dominated by S (sentence). Cf. **object** 1.

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**subject complement** see **complement 1**.

**subjective** = **nominative 1**

**subjective genitive** Applied to the **genitive** or **possessive** in a phrase, e.g., *amor Dei*, *the love of God*, where *Dei* or *God* is the subject of an underlying sentence 'God loves (someone)'. (Contrasts with **objective genitive** where *God* is the object in the underlying sentence 'someone loves God'.)

**subjunct** A group of **adverbials** which function in a subordinate role in relation to other clause elements, relating to the whole clause or some part of it, and expressing variously viewpoint, courtesy, volition, etc. e.g., *Frankly*, *I couldn't care less*, *Can we go, please*, *She pushed him over deliberately* (= 'intentionally' rather than 'with deliberation').

**subjunctive** The influential **mood** expressing *non-factivity* and possibility, e.g., in Latin *amet* 'let him love'; in English *If I were in charge, I would do something about this*. (Contrasts with the **indicative**, e.g., *If I am in charge, you will do as I say*. Cf. **imperative**).

**subordinate (dependent) clause** A clause which cannot stand on its own but is linked by a **subordinating conjunction** or **subordinator** to a **main clause**, e.g., *that he was ill if you don't stop*, etc.

**subordinating conjunction** see **conjunction 1**, **subordinate clause**

**subordination** A type of syntactic linking in which one linguistic unit, the **subordinate** one, is dependent on another, e.g., *He said that he was ill* or *If you don't stop you will be ill*.

**substantive** A **noun** or noun-like item, e.g., *goldfish*, *the young*; also, sometimes applied to pronouns.

**suffix** An **affix** added to the end of a word or stem, e.g., *printable*, *crazily*.

**superlative** The **degree** of comparison of three or more entities, expressed formally as, e.g., *biggest*, *most astounding*.

**superordinate** Describes a linguistic unit above another (**subordinate** (see (**subordination**))) unit in a hierarchy, e.g., the main clause in a complex sentence.

**surface structure** The stage in the derivation of a sentence that comes after the application of transformational rules and provides the input for the phonological component. More generally, the form an utterance or sentence takes as spoken or as it appears on the page, freq. in relation to the ambiguities evident in such material, e.g., the surface structures of *Germs are too small to see without a microscope* and *They are too much involved in the affair to see without help* are similar (though their **deep-structures** are not).

**switch reference** The attachment of a particular morpheme to, usu., the verb of a subordinate clause to indicate whether the subjects of adjacent clauses in the

same sentence are coreferential or not, i.e., a particular morpheme indicates a switch in reference, another that the subjects are coreferential. The phenomenon affects, e.g., Native American and Australian languages.

**syncretism 1** The **merger** or 'falling together' of different forms or categories, e.g., of forms after the disappearance of inflections or cases, e.g., the OE nominative, accusative, dative and instrumental are expressed by only one form in later Middle English, **2** The identity in form of different parts of speech, e.g., past tense and past participle: *He raced*, *He had raced* or present participle and verbal noun: *a jumping bean*, *He likes jumping*.

**syntagmatic** Orig. in saussurean linguistics, the relation a linguistic unit bears to other units with which it co-occurs in a sequence or context, e.g., in *sit*, *s* and *t* are in a **syntagmatic** relation with *i* (Contrasts with **paradigmatic** (see **paradigm 2**)).

**syntax 1** The rules governing how words combine to form sentences. (Contrasts with **morphology 1**.) **2** More generally, (the study of) the grammatical relationships entered into by linguistic units at any level, including **morpheme** and **sentence**. **3** The relationships among characters, groups of characters or symbols independent of their meanings or how they are used.

**system** A linguistic network of any sort the meaning of whose terms is determined by their relationships of equivalence or contrast with each other, e.g., the vowel system, verbal system, system of kinship terms, etc.; the interrelated sets of such networks make up the system of the language as a whole.

**systemic grammar** A development of **scale and category grammar** in which **system** is the central principle, the concern of grammar being to set up a network of such systems sufficient to account for the relationships observable in the language.

**t** = **trace**

**tag 1** A word or phrase used to abbreviate a list, e.g., *etc.*, *et. al.*, *and so on/forth*, *and the like*. **2** An amplification of something already said, e.g., *She's a really fine cook, that Delia Smith*. **3** see **tag (question)**, **tag (statement)**

**tag (question)** A **question** tagged onto the end of a statement (or imperative) acting to confirm or query what is being said (see **checking tag** and **copy tag**), e.g., *You like this, don't you?* / *You don't like this, do you?*, *Hold this, will you?* In, e.g., French and German only the confirmatory sort is found: French, *n'est-ce pas?*, German, *nicht wahr?*

**tag (statement)** A confirmatory statement tagged onto the end of another statement, e.g., *That was good, that was!* / *She's a good cook, is Martha*.

**tagmemics** An American structuralist model of linguistic description which proposes the **phoneme**, **morpheme** and **tagmeme** as the basic units, respectively, of phonology, lexicon and grammar, the **tagmeme** being used as a cover term for all grammatical units, which are distinguished in the analysis by differences in **slots** and the **fillers** which can fit into them, e.g., a noun/pronoun or subject in *\_\_\_\_\_ wore a hat* (e.g., *She, Joan, The old man*) or a clause/phrase in *the boy \_\_\_\_\_ was caught* (e.g., *who skipped school, running away*).

**telic** A type of **aspect** where the activity described by the verb has a terminal point, e.g., *fall, jump*. (Contrasts with **atelic**.)

**telicity, boundedness** The condition, in an action or event, of being **bounded** or completed, e.g., by a **boundary**.

**temporal clause** A variety of **adverbial clause** expressing time, e.g., *When he got home, he fell asleep*.

**tense 1** The category of the verb that places the action or state referred to in time, past, present or future in relation to the utterance, e.g., in Latin *scripsi, scribo, scribam* (I wrote, I am writing, I shall write). In English there are only two grammatical tenses, past and present, e.g., *I wrote, I write*; the many other trad. 'tenses,' e.g., future, perfect, pluperfect, etc. are formed from combinations of **tense** and **aspect**. See also **present tense**. **2** also TNS in government and binding theory, the component of INFL (see **inflection 2**) concerned with **tense** (sense 1), a feature of the verb usually, but not always, coincident with AGR (see **agreement 2**).

**terminative** see **resultative 2**

**that-clause** A clause, in English, introduced by the conjunction *that* e.g., *I said that Susie was the dog*. Cf. **contact clause**.

**thematic role = theta role**

**thematization, thematic fronting** The shifting of an element to the position of **theme** at the beginning of a sentence.

**theoretical grammar** (The study of) aspects of **grammar** (sense 3) which go beyond an analysis of the data of individual languages to a development of the theoretical foundations of such analyses, e.g., the concepts of grammatical categories, relations, meaning, etc., how lexical meaning relates to syntax and syntax to phonology, etc. Cf. **universal grammar**.

**theta** ( $\theta$ ) **role, thematic role** The semantic role borne by an **argument** e.g., **agentive, source, goal**, etc.

**third person** see **person**.

**three-place verb = ditransitive verb**

**to-infinitive** see **infinitive**

**topic** The entity, in a sentence, about which something is said. (Contrasts with **comment**.)

**topic sentence** The sentence that introduces the **theme** of a paragraph.

**topicalization** The movement of a constituent into topic position at the beginning of a sentence, e.g., *The cat was what the dog chased*.

**trace(t)** The coindexed empty node left behind by a constituent moved to some other place in the structure, e.g., in **wanna-contraction**, this concept is used to explain why in examples like *You might want who to win?* → *Who might you want to win? want to* cannot be contracted to *wanna*.

**traditional grammar** The mixture of prescriptive and descriptive grammatical material offered in accounts of language formulated before the development of modern linguistics.

**transformation, transformational rule, transform** One of a number of processes that act on the phrase-structure input (**deep structure** or **D-structure**) of the grammar to reorder it in such a way as to produce the **surface structure** or **S-structure** output, thereby expressing the perceived linkage between, e.g., active and passive, declarative and interrogative, etc.

**transformational analysis** Linguistic (sense 2) analysis according to the principles of **transformational grammar**.

**transformational cycle = cycle 2**

**transformational grammar (TG)** A grammar which includes a **transformational component** in which, by means of **transformations**, elements of structure are reorganized, the **deep structure** of sentences thereby being linked to the **surface structure**; by this process structural relationships are confirmed, e.g., *I love Lucy* is shown to be closely related to *Lucy is loved by me*, and structural ambiguities are resolved, e.g., *Flying planes can be dangerous* is shown to be derivable from either *planes which fly* or *people who fly planes*. See also **transformation**.

**transgressive** see **punctual**.

**transitive (two-place) verb** A verb which combines with two nominals, e.g., *James killed Adam*. (Contrasts with **intransitive verb**.)

**transitivity 1** The category of the **verb** or **clause** (sense 1) which refers to how the verb relates to any dependent nominals occurring in the predicate of which it is a part specif. a verb occurring with an **object** (sense 1) is **transitive**, a verb without an object is **intransitive**. See also **ditransitive verb, ergative**. **2** Applied to **prepositions**, a preposition which is always accompanied by a noun phrase complement or **object** (sense 2), e.g., *with* (*she was with a friend* but *\*she was with*) is **transitive**; whereas *about* (*she strolled about the town* / *she strolled about*) can be **transitive** or **intransitive**.

**translative** In some **inflecting** and **agglutinating languages**, the **case** which expresses the meaning of change from one place to another.

## Glossary

**tree (diagram)** A branching diagram representing the analysis of a sentence, etc. into its constituents, the equivalent of **labeled bracketing**.

**trial(ity)** A contrast of **number** in some languages, referring to 'three'. (Contrasts with **singular(ity)**, **dual(ity)**, **plural(ity)**.)

**trivalent** see **valency**

**truth conditional semantics** A theory of **semantics** that defines meaning in terms of **truth conditions** of sentences, i.e., the conditions that must be fulfilled in any world for the sentence in question to be true. It has nothing to say about how such a statement relates to individuals or individual states of affairs, e.g., *John owns a dog* is true in any world in which the expression *John* has a well defined reference relation to any individual John, and where there is a binary relation *own* such that John is the first element in a pair with some dog as the second element.

**two-place verb** = **transitive verb**

**unacceptable** Lacking **acceptability**, judged as not possible or normal by a native speaker. Such examples are marked by an asterisk (\*), e.g., \**John Gloria kissed*.

**unaccusative** Describes an **intransitive** verb whose **subject** (sense 1) can be understood as originally an **object** (sense 1), i.e., as a **recipient** or **patient** in relation to the action, e.g., *broke* in the *The jug broke*. Cf. **ergative** 3.

**unary** Consisting of one, e.g., **unary verb**, consisting of one word, *he ran*.

**unattached clause, dangling participle** A non finite clause (participial phrase) in which the implied subject is not the same as that of the main clause with which it occurs, e.g., ?*Calling her up, the engaged tone was all I got*./\**Having put the cases on board, the train departed*.

**uncountable noun** = **mass noun**

**undergoer** The primitive **macro-role** which expresses the participant which is acted upon. (Contrasts with **actor** 2.)

**underlying subject** see **subject**.

**ungoverned** see **government** 2.

**ungrammaticality, ill-formedness, deviation, deviance** The failure to conform to the rules of (a) grammar; conventionally indicated by (\*), e.g., \**He fell home*. (Contrasts with **grammaticality**.)

**unit** A general term for an entity which is the focus of interest, e.g., phonological unit, grammatical unit, etc.

**universal** A property of language common to all human languages, taken to arise from the species-specific human capacity for language learning as opposed to culture-specific aspects of particular languages.

**universal grammar, general grammar** 1 (Investigation into) the **universals** of human language (**language universals**) and the constraints within which they function, which have been suggested as defining properties of natural language. 2 A **grammar** which is or aims to be applicable to any language.

**universal quantifier** A proposition stating 'for all X, it is the case that X has the property specified'; contrasts with **existential quantifier** which states 'for some X it is the case that X has the property specified'; these propositions are of interest to linguists particularly in the investigation of semantic ambiguity.

**utterance** Any stretch of speech by a single speaker preceded and followed by silence on the part of that speaker, i.e., a piece of linguistic behavior of any duration and for which no linguistic analysis has been constructed, usu. the datum of such analysis.

**valency, valence**, in case grammar and dependency grammar, a weighting or quantification of verbs in terms of the number of dependents (or **arguments** or **valents**) they take, i.e., an intransitive verb is **monovalent**, it has a valency of 1, e.g., *John fell*; a transitive verb is **bivalent** with a valency of two, e.g., *John chased the cat*; a verb which also takes an indirect object or some other non-deletable dependent is **trivalent** with a valency of 3, e.g., *John gave the cat some milk*, *John put the cat in its basket*; a verb with no arguments, in e.g., *It rains* is **zero-valent** or **avalent**.

**valent** see **valency**

**variable** A term which may assume different values, any member of a set of individuals chosen randomly from within the set, e.g.,  $x = 1, 2 \dots$ , or the element which takes a particular position in a linguistic structure, e.g., X VP might stand for any sort of construction that can assume subject position.

**verb (V)** A member of the word class trad. defined as a 'doing' word, denoting an action or state, e.g., *Mary dances*, *Mary knows*. In many languages, the verb is **formally** identifiable in that it displays contrasts of **tense**, **aspect**, **voice**, **mood**, **number** and **person** and is in terms of **function** the most central element in a clause, able to occur on its own in the imperative, e.g., *Hurry!* and, as a minimal predicate, with a single noun as subject, e.g., *Jane ran*. It is the requirements of the verb that determine the nature of the rest of the predicate, e.g., *give* requires direct and indirect objects: *Give Mary a present*; *put* requires direct object and prepositional complement: *Put the keys in your pocket*; *break* requires no predicate: *The glass broke*.

**verb of action** see **dynamic (verb)**.

**verb phrase (VP)** A phrase which functions like a unary verb, e.g., *He went* / *will go* / *would have gone*, etc.



**verbal noun, gerund** A noun expressing the action of the verb from which it is derived, e.g., *Flying is dangerous*.

**verbless clause** A clause from which the verb has been omitted, e.g., *I'll be there, if at all possible*.

**vocative 1** In **inflecting** and **agglutinating languages**, the **case** used when addressing a person or thing, e.g., Latin *Veni, amice* 'Come, my friend.' **2** Applied to a similar function in non-inflecting languages, e.g., *Come, my friend*, indicated by intonation or punctuation.

**voice** The category of the verb which expresses the relationship of the **subject** of the verb to the action expressed by the verb, i.e., in the **active voice** the subject is the **agent** (see **agent(ive)**) of the action; in the **passive voice** the subject is **recipient** or **patient** in relation to the action. See also **middle voice**.

**weak verb** see **strong verb**

**well-formedness** = **grammaticality**

**wh-form** (-clause, -complement, -noun phrase, -question -word, etc.), **wh-movement** (-fronting, etc.) A clause etc. introduced by involving, consisting of, etc. the class of items chiefly beginning with *wh-*, i.e., *why*, *what*, *where*, *how*; *who*, *what*, etc. Cf. **interrogative pronoun**

**word** One of the two fundamental units of grammar, the other being **sentence**; in this sense = **lexeme** and **empty word** taken together. The linguistic unit that combines to form phrases, clauses and sentences and is otherwise distinguished as the smallest possible sentence unit, e.g., *Hurry!* and by its **cohesiveness** and by the fixed order of its internal structure, e.g., *impossible* but *\*possibleim* or *\*possimible*.

**word class** The class of words which share morphological or syntactic properties, e.g., the class of **nouns**, **verbs**, etc. = **part of speech**.

**word formation** The process of forming new words from derivational (**derivation**) sources, e.g., affixation, compounding, etc. as opposed to the process of adding inflections, which merely changes the form of the

word within the **paradigm**, e.g., *annoyance* < *an-* *noy* + *ance*, in comparison with *annoying*, *annoyed*.

**word order** The linear sequencing of words. **1** As a means of classifying languages, i.e., as having **fixed** or **free word order**. **2** Internally, within a language, with regard to classifying linguistic units as, e.g., statements, questions, etc. where word order changes, e.g., *He will come today* / *Will he come today?*.

**X-bar ( $\bar{X}$ ,  $X'$ ) syntax (theory)** A theory which draws the generalization from the structure of phrases (noun phrase (NP), verb phrase (VP), adjective phrase (AP), prepositional phrase (PP), etc.) that all of them have the structure **head** from which the essential character of the phrase derives, and **complement** described as the **projection** of the head. Thus the head of any phrase, i.e., the category itself, may be termed  $X(-N, V, A, P, \text{etc.})$  and the projection of the phrase,  $X\text{-bar } (\bar{X}, X')$ , or  $X\text{-double-bar } (\bar{\bar{X}}, X'')$ , being respectively an intermediate 'semi-phrasal' level and the full phrase (the **maximal projection** of the phrase). Thus in the phrase *the pleasure of going home*, *pleasure* =  $X$  (in this case =  $N$ ), *pleasure of going home* =  $X'$  or  $N'$ , and *the pleasure of going home* =  $X''$  or  $N''$  or NP; similarly, in *very happy to see you*, *happy* =  $X$  or  $A$ , *happy to see you* =  $\bar{X}$  or  $A'$  and *very happy to see you* =  $X''$  or  $A''$  or AP, and so on for verb and prepositional phrases. Sentences are analyzed in the same way taking a category **INFL** (inflection) as the **head**.

**yes/no question** A **question** distinguished by word order, intonation or punctuation, e.g., *Did you see him?*, *You saw him?*

**zero article** The lack of an **article** before a noun, in, e.g., *The boy loves cycling*.

**zero (contact) relative** A **relative clause** where the relative pronoun is omitted, e.g., *the hat she wore*.

**zero valent** see **valency**.

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## List of Major Language and Linguistics Journals

The list of journals given below is a representative selection of periodical publications, particularly those published in English, devoted primarily to the dissemination of research on languages and linguistic theory and includes all those frequently referred to in this Encyclopedia. A more comprehensive listing can be found in the *Bibliographie linguistique de l'année/Linguistic Bibliography for the Year* (Kluwer, Dordrecht). With a few exceptions the abbreviations given below are those used in this annual publication. A somewhat different and slightly less extensive listing can be found in *Linguistics and Language Behavior Abstracts* (LLBA, San Diego, CA).

<i>AJL</i>	Australian Journal of Linguistics: journal of the Australian Linguistic Society. St Lucia, Queensland
<i>AmA</i>	American Anthropologist. Menasha, WI
<i>AnL</i>	Anthropological Linguistics. Bloomington, IN
<i>AS</i>	American Speech. New York
<i>BJL</i>	Belgian Journal of Linguistics. Bruxelles
<i>BLS</i>	Berkeley Linguistics Society: proceedings of the annual meeting. Berkeley, CA
<i>CD</i>	Child Development. Chicago, IL
<i>CL</i>	Computational Linguistics. Cambridge, MA
<i>Diachronica</i>	Diachronica: international journal for historical linguistics/revue internationale pour la linguistique historique/Zeitschrift für historische Linguistik. Amsterdam
<i>FoL</i>	Folio Linguistica: acta Societatis Linguisticae Europaeae. The Hague
<i>FoLH</i>	Folio Linguistica Historica: acta Societatis Linguisticae Europaeae. The Hague
<i>IJAL</i>	International Journal of American Linguistics. Chicago, IL
<i>JALL</i>	Journal of African Languages and Linguistics. Dordrecht
<i>JIES</i>	Journal of Indo-European Studies. Washington, DC
<i>JL</i>	Journal of Linguistics. Cambridge
<i>JLR</i>	Journal of Linguistic Research. Bloomington, IN
<i>JPhL</i>	Journal of Philosophical Logic. Amsterdam
<i>JPrag</i>	Journal of Pragmatics: an interdisciplinary quarterly journal of language studies. Amsterdam
<i>JWAL</i>	Journal of West African Languages. Ibadan, Nigeria
<i>LaPh</i>	SEE <i>L&amp;P</i>
<i>LBer</i>	Linguistische Berichte. Braunschweig
<i>Lg</i>	Language: journal of the Linguistic Society of America. Baltimore, MD
<i>LIn</i>	Linguistic Inquiry. Cambridge, MA
<i>Lingua</i>	Lingua: international review of general linguistics. Amsterdam
<i>Linguistics</i>	Linguistics. Berlin
<i>LiS</i>	Language in Society. New York/Cambridge
<i>L&amp;P</i>	Linguistics and Philosophy: an international journal. Dordrecht
<i>LRev</i>	The Linguistic Review. Dordrecht
<i>MT</i>	Machine Translation. Dordrecht

*List of Major Language and Linguistics Journals*

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<i>NLLT</i>	Natural Language & Linguistic Theory. Dordrecht
<i>NLS</i>	Natural Language Semantics: an international journal of semantics and its interfaces in grammar. Dordrecht
<i>OL</i>	Oceanic Linguistics. Honolulu, HI
<i>PMLA</i>	Publications of the Modern Language Association of America. New York
<i>PY</i>	Phonology Yearbook (now <i>Phonology</i> ). Cambridge
<i>RdL</i>	Rivista di linguistica. Torino
<i>SAL</i>	Studies in African Linguistics: published by the Department of Linguistics and the Center for African Studies, University of California, Los Angeles, CA
<i>SLang</i>	Studies in language: international journal sponsored by the foundation 'Foundations of Language.' Amsterdam
<i>ST&amp;U</i>	Sprachtypologie und Universalienforschung. Berlin
<i>TL</i>	Theoretical Linguistics. Berlin
<i>TPhS</i>	Transactions of the Philological Society. Oxford
<i>Word</i>	Word: Journal of the International Linguistic Association. New York
<i>ZGL</i>	Zeitschrift für germanistische Linguistik. Berlin



# Name Index

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This Name Index comprises an alphabetical listing of the names of authors cited in the text and the references listed at the end of each article. For each name, the page numbers for the citation in the Bibliography are given, followed by the page number(s) in parentheses of where that reference is cited in the text.

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